

Supplementary data

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Questions and answers

1. What is scoliosis and how is it diagnosed?

ChatGPT 4o:

Scoliosis: It is a deformity characterised by the curvature of the normally straight structure of the spine to the right or left. Usually a 'C' or 'S' shaped curvature is seen. Scoliosis has different classifications depending on age, cause and degree of curvature. The most common type is idiopathic scoliosis of unknown cause. There are also congenital (congenital), neuromuscular (muscle and nerve origin) and degenerative scoliosis.

How is it diagnosed?

1. Clinical Evaluation:

- o The curvature of the spine is observed when the patient stands or bends.
- o Adams Bending Test: The patient is asked to bend forward and the asymmetry of the back is checked.
- o Asymmetries in the shoulders, shoulder blades, hip line and waist are examined.

2. Radiological Imaging:

- o X-rays are the gold standard for the diagnosis of scoliosis.
- o The degree of curvature of the spine is measured using the Cobb angle. Curvatures with Cobb angle $\geq 10^\circ$ are considered as scoliosis.
- o MRI or CT can be used if an underlying pathology is suspected (e.g. congenital anomalies, tumours).

3. Patient's History and Risk Factors:

- o Family history of scoliosis is questioned.
- o The risk of progression is evaluated in children in the growing age group.

Treatment is determined according to the degree of curvature, symptoms and potential for progression. While follow-up may be sufficient for mild scoliosis, corset treatment or surgery may be required in advanced cases.

Gemini Advanced 1.5. Pro:

Scoliosis is a health problem that occurs when the spine curves sideways in the thoracic or lumbar region. Normally, the spine is in the shape of a straight line when viewed from behind. In scoliosis, the spine takes a shape like the letter 'S' or 'C'. This curvature can make a person appear to lean to one side.

Scoliosis is usually diagnosed by the following methods:

- Physical examination: The doctor examines the patient's posture, spinal curvature and differences in shoulder and hip heights. The patient is asked to lean forward so that the curvature becomes more pronounced.
- X-ray: X-ray is the most important tool in the diagnosis of scoliosis. X-ray images are used to measure the degree of curvature of the spine and the rotation of the vertebrae. If the curvature is more than 10 degrees, scoliosis is diagnosed.
- Other imaging methods: In some cases, more detailed imaging methods such as Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) can be used. These methods provide more detailed images of the spine and surrounding tissues.

Early diagnosis of scoliosis is very important for the success of treatment. Regular scoliosis screening is recommended, especially in children and adolescents.

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Scoliosis is a sideways curvature of the spine and can form a 'C' or 'S' shaped curve. Mild cases are usually asymptomatic, while severe cases can cause back pain and abnormal posture.

Diagnosis is usually made by the following methods:

1. Physical Examination: The health professional checks for asymmetry by observing the spine while standing and bending forward.
2. Imaging Tests: X-rays are often used to confirm the diagnosis and assess the severity of the curvature. If other underlying conditions are suspected, MRI or CT scans may be recommended.

2. What are the available surgical and non-surgical treatment options for scoliosis?

ChatGPT 4o :

1. Non-Surgical Treatment Options

Non-surgical methods are usually used in cases of mild or moderate scoliosis and to prevent progression of the curve.

a. Observation

- It is generally preferred for curves with a Cobb angle of less than 20°.
- Regular X-rays are taken and the progression of the scoliosis is monitored.

b. Corset Treatment (Bracing)

- It is suitable for children with a Cobb angle between 20° - 40° , with continued growth potential.
- Braces can help prevent progression of the curve, but do not correct the existing curve.
- Examples:
 - o Boston brace: Used for middle and lower spinal curvatures.
 - o Milwaukee Brace: A type of corset that covers the entire spine.
 - o Charleston Curvature Corset: It is usually used at night.

c. Physical Therapy and Rehabilitation

- Scoliosis-specific physiotherapy methods such as Schroth Therapy are applied.
- It focuses on strengthening the spinal muscles, improving posture and reducing pain.

d. Alternative Therapies

- Methods such as Pilates, yoga or chiropractic treatment can be used to relieve pain and increase flexibility. However, the effect of curve correction has not been proven.

2. Surgical Treatment Options

Surgery is usually performed in cases of severe scoliosis (Cobb angle greater than 40° - 50°) or progressive curvature. The aim is to correct and stabilise the curvature of the spine and prevent progression.

a. Spinal Fusion

- It is the most common surgical method.
- The curved vertebrae are straightened and fixed with metal rods, screws and hooks. The vertebrae are then fused together.
- Posterior approach is generally preferred.

b. Growth Friendly Surgeries (Growing Rods)

- Suitable for growing children.
- The rods are inserted and adjusted at regular intervals to allow the spine to grow (magnetically adjustable rods are also available).

c. Vertebral Body Tethering (VBT)

- It is a less invasive method. A cable is used to correct the curvature of the spine.
- It is especially suitable for children with growth potential.

- It aims to preserve mobility and is considered as an alternative treatment to spinal fusion.

d. Osteotomy and Revision Surgeries

- It is applied to correct severe deformities or to revise previous failed surgeries.

Determining Factors in Treatment Selection

- Cobb angle
- Age and growth potential of the patient
- Type and rate of progression of scoliosis
- Severity of symptoms (e.g. pain, difficulty breathing)
- Quality of life and expectations of the patient

While non-surgical treatments are usually the first choice, surgical intervention is only applied when necessary. The treatment plan is prepared specifically for the patient with a multidisciplinary approach.

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The treatment of scoliosis depends on the degree of curvature, the age of the patient, the state of bone development and general health. Treatment options are generally divided into two as surgical and non-surgical methods:

Non-Surgical Treatment:

- Observation: In patients with a low degree of curvature and ongoing bone development, regular follow-up may be sufficient to see if scoliosis progresses.
- Corset: It is common to use a corset in moderate curvatures (between 25-40 degrees) and in patients with ongoing bone development. The corset aims to stop or slow down the progression of the curve. The corset type and duration of use depends on the degree and type of curvature.
- Physiotherapy: Scoliosis exercises can help strengthen the muscles around the spine, correct posture and reduce pain. Physiotherapy alone does not correct scoliosis, but can be used in combination with other treatment methods.

Surgical Treatment:

- Spinal fusion: Surgical treatment may be required in patients with a high degree of curvature (usually 45 degrees and above) or in patients who do not respond to brace treatment. In spinal fusion surgery, the vertebrae are fixed together using screws, rods and bone grafts. This straightens the spine and prevents the curvature from progressing.

Your doctor will decide which method will be used in the treatment of scoliosis together with you. During the treatment process, it is important that you follow your doctor's recommendations and do not neglect your regular check-ups.

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There are various surgical and non-surgical treatment options for scoliosis:

Non-Surgical Treatment Options:

1. Observation: In mild cases of scoliosis, the doctor can monitor the patient's condition with periodic check-ups and X-rays. Active treatment may not be necessary
2. Corset: In patients with moderate scoliosis, a back brace may be recommended to stop or slow the progression of spinal curvature
3. Physiotherapy: Physiotherapy may be recommended to improve posture, strengthen muscles and increase flexibility
4. Alternative Treatments: Alternative treatments such as chiropractic care, acupuncture or massage therapy may be preferred by some patients. However, these treatments have not been proven to be effective in the treatment of scoliosis

Surgical Treatment Options:

1. Spinal Fusion: The process of fusing the vertebrae to correct the curvature of the spine and prevent further progression
2. Vertebral Column Resection: Removal of part of the vertebrae to correct the curvature of the spine
3. Spinal Osteotomy: Cutting and realigning the vertebrae to correct the curvature of the spine

As each patient's situation is different, it is important to consult a doctor to determine the most appropriate treatment options.

3 What are the risks of scoliosis surgery?

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Scoliosis surgery, although generally a safe procedure, involves some risks like any surgical intervention. Risks may vary depending on the extent of the surgery, the general health status of the patient and the techniques used.

1. General Surgical Risks

- Infection: Infection may develop at the wound site or in deeper tissues. It can be treated with antibiotics, but in some cases additional surgery may be required.
- Bleeding: Excessive bleeding may occur during or after surgery. This may require blood transfusion.

- Clot Formation (Deep Vein Thrombosis, DVT): Blood clots may form in the legs and these clots may move to the lungs and cause pulmonary embolism.

- Anaesthesia Related Complications: In rare cases, anaesthetic reactions or complications may occur.

2. Specific Scoliosis Surgery Risks

a. Nerve Damage:

- It is one of the most important risks in spinal surgery. Nerve roots or spinal cord may be damaged.

- Symptoms: Numbness, weakness or paralysis in the arms or legs (very rare).

b. Failure to maintain spinal stability:

- The inserted rods, screws or hooks may break, loosen or slip out of place. This usually requires additional surgery.

c. Inadequate correction or recurrence of curvature:

- The spine may not straighten sufficiently or the scoliosis may progress again. This can be seen especially in growing children.

d. Fusion Problems:

- There may not be sufficient fusion between the vertebrae (pseudarthrosis). This risk is higher in smokers and in certain diseases.

e. Decreased spinal mobility:

- Spinal mobility may decrease after surgery. This may affect daily activities, but usually does not cause serious problems.

f. Respiratory and Cardiac Complications:

- Especially in scoliosis surgeries affecting the thoracic region (thoracic spine), temporary impairment of lung and heart function may occur.

3. Rare Complications

- Spinal Cord Injury: It is a very rare but serious complication and can lead to paralysis.

- Metal Allergy or Implant Reaction: Allergic reactions to the implants used may rarely develop.

- Bowel or Bladder Problems: Spinal cord damage may result in problems with urinary or bowel control.

Methods to Minimise Risks

- Selection of an Experienced Surgeon: An experienced surgeon and a specialised team can greatly reduce the risk of complications.

- Neuromonitoring: It is used to ensure the safety of the nerves and spinal cord during surgery.

- Avoiding Smoking and Unhealthy Habits: Smoking increases the risk of fusion problems.

Although scoliosis surgery can be risky, the success rate is quite high with the right patient selection and surgical techniques. The benefits and risks of the surgery should be discussed in detail with the patient.

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Scoliosis surgery is a major surgical procedure performed on a delicate area such as the spine and, like any surgery, carries some risks. Although these risks are rare, it is important to be aware of them before surgery. Here are some of the risks associated with scoliosis surgery:

Risks that may occur during and after surgery:

- Infection: As with any surgery, there is a risk of infection. This risk can be reduced with antibiotics.
- Bleeding: Bleeding may occur during or after the operation.
- Nerve damage: There is a risk of nerve damage because the spinal nerves are worked on closely. This can cause numbness, weakness or loss of sensation in the legs.
- Blood clots: Blood clots may form in the legs after the operation. These clots can travel to the lungs and cause serious problems.
- Complications related to anaesthesia: Complications such as allergic reactions to anaesthesia or breathing problems may develop.
- Implant problems: Screws, rods or other implants used in the operation may break, dislodge or loosen over time.

Long Term Risks:

- Incomplete fusion of the spine: Failure of the vertebrae to fully fuse after surgery can cause pain and limitation of movement.
- Adjacent segment disease: Wear and tear may occur over time in the vertebrae above or below the fusion area.
- Back pain: Back pain may persist or new pain may occur in some patients after surgery.
- Decreased spinal mobility: Spinal fusion surgery slightly reduces the mobility of the spine.

Scoliosis surgery is generally a safe procedure and most patients achieve successful results. However, as with any surgical procedure, there are risks. These risks may vary depending on factors such as the surgeon's experience, the patient's general health status and postoperative care. It is important to discuss the risks and benefits in detail with your doctor before surgery.

Microsoft Copilot:

Scoliosis surgery is a surgical intervention to correct the curvature of the spine and carries some risks. These risks are as follows:

1. Risk of Infection: Infection may develop after surgery
2. Bleeding and haematoma: Bleeding and haematoma formation may occur during or after surgery
3. Nerve Damage: Damage to the nerves around the spine can occur, which can lead to neurological problems
4. Spinal displacement or return of the curve: There is a risk of spinal displacement or return of the corrected curve after surgery
5. Complications related to anaesthesia: Various complications may occur due to anaesthesia

These risks may vary depending on factors such as the patient's general health, age and the severity of the scoliosis. It is important to discuss these risks in detail with your doctor before the operation.

4. Is scoliosis surgery safe?

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Yes, scoliosis surgery is generally a safe procedure. With the contribution of modern surgical techniques, advanced equipment and experienced surgeons, complication rates have been considerably reduced. However, it should be remembered that scoliosis surgery, like any surgical procedure, involves some risks.

Factors Ensuring Safety:

1. Experienced Surgeon and Team:

o Scoliosis surgery is usually performed by orthopaedic or neurosurgical specialists specialised in spine surgery. An experienced surgeon can minimise the risk of complications.

2. Modern Technology and Techniques:

o Neuromonitoring: The safety of the nerves and spinal cord is continuously monitored during surgery.

o Minimally Invasive Methods: In some cases, recovery time can be shortened by using less invasive methods.

o Magnetic Adjustable Rods: In paediatric patients, less surgical intervention is needed with technologies such as growing rods.

3. Success Rate:

o In most scoliosis surgeries, it has been observed that the curve is significantly corrected and the patient's quality of life improves.

4. Objectives of the Surgery:

- o To correct the curve.
- o To stop the progression of the curve.
- o To reduce pain and improve organ function (e.g. lung capacity).

Safety Considerations:

1. General Health Status of the Patient:

- o A detailed assessment is made prior to surgery. Underlying health problems (e.g., heart disease, osteoporosis) may affect the safety of the operation.

2. Age and Degree of Curvature:

- o Surgery usually works better in children and young people because they have a greater capacity for healing.
- o Surgery may be more complicated in severe curvatures.

3. Risk of Complications:

- o Complications are rare but possible (e.g. infection, nerve damage). These are usually successfully managed with early intervention.

Outcome:

Scoliosis surgery is a safe and effective treatment when appropriate patient selection and performed by a specialised team. Patients should discuss the benefits and possible risks of surgery in detail with their surgeon. Most patients report reduced pain, improved mobility and a better quality of life after surgery.

Gemini Advanced 1.5. Pro:

Scoliosis surgery is a major surgical procedure that carries risks, especially since it is performed in a sensitive area such as the spine. However, scoliosis surgeries have become safer today than in the past, and successful results are usually achieved.

The safety of scoliosis surgery depends on the following factors:

- The surgeon's experience: A surgeon specialised and experienced in scoliosis surgery reduces the risk of complications.
- General health status of the patient: The risks of surgery are lower in patients with good general health.
- Postoperative care: Careful care and rehabilitation after surgery accelerates recovery and reduces the risk of complications.
- Type and complexity of surgery: Factors such as the degree of curvature, the condition of the spine and the age of the patient affect the complexity of the surgery and may increase the risks.

What are the risks of scoliosis surgery?

As I mentioned before, scoliosis surgery has some risks. These include complications such as infection, bleeding, nerve damage, implant problems and incomplete fusion of the spine. However, these risks are rare and most patients recover successfully after surgery.

How is the decision for surgery made?

The decision for scoliosis surgery is made jointly by the doctor and the patient, taking into account factors such as the patient's age, degree of curvature, general health and quality of life. Surgery may be recommended if non-surgical treatment methods (observation, corset, physiotherapy) have been tried and have not been successful or if the curvature is progressing too rapidly.

In conclusion, although scoliosis surgery carries risks, it can be a safe and effective treatment option when performed by an experienced surgeon and in appropriate patients. Discussing the risks and benefits in detail with your doctor before surgery will help you to set realistic expectations about the surgery and make an informed decision.

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Scoliosis surgery can be an effective treatment option in severe cases of scoliosis and is generally considered safe. However, as with any surgical intervention, it carries some risks. These risks include infection, bleeding, nerve damage and anaesthetic-related complications

The safety of the surgery may vary depending on factors such as the patient's general health, age and the severity of the scoliosis. It is important to discuss these risks and the potential benefits of surgery in detail with your doctor before the operation.

5. Who is a suitable candidate for scoliosis surgery?

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Scoliosis surgery is generally preferred when scoliosis is severe, progresses rapidly or cannot be controlled with non-surgical treatments. An individual assessment is made for each patient and it is decided whether surgery is appropriate.

Suitable Candidates for Scoliosis Surgery:

1. Cobb Angle and Degree of Curvature:

- Patients with a Cobb angle of 40°-50° or above.
 - o In adults, curvatures over 50° can often threaten spinal stability.
 - o In growing children, curvatures over 40° are likely to be candidates for surgery.
- Surgical intervention may be necessary if the curvature progresses rapidly during growth.

2. Symptoms:

- Severe back or lower back pain.
- Chest deformities that affect lung function or heart health (especially with thoracic scoliosis).
- Severe psychosocial effects due to deformity in physical appearance.

3. Inadequacy of Non-Surgical Treatments:

- If the progression of curvature cannot be stopped with corset treatment, physiotherapy or other methods.
- If non-surgical methods are not sufficient to maintain activities of daily living.

4. Age and Growth Status:

- Children in the growing age: Surgery is considered because the risk of progression of the curve is high during the period of rapid growth.
- Adults: Surgery may be necessary if the curve causes pain or neurological symptoms.

5. Neurological or Mechanical Problems:

- If there are neurological symptoms such as nerve root compression, weakness in the legs, numbness.
- If body imbalance or mechanical problems have developed due to curvature.

Who may not be suitable for surgery?

- Patients with mild scoliosis: Curves with a Cobb angle of less than 20° usually do not require surgery.
- Serious medical problems: Heart, lung or general health problems may increase the risks of surgery.
- Elderly individuals: Surgery may not be preferred in cases where the capacity to recover after surgery is low. In these cases, pain management and physiotherapy are prioritised.

Objectives of Surgery:

- To correct and stabilise spinal curvature.
- To prevent progression of the curvature.
- To alleviate symptoms (e.g. pain, shortness of breath).
- To improve the patient's quality of life.

Outcome: Suitable candidates for scoliosis surgery are determined by a multidisciplinary team, taking into account the degree of curvature, age, symptoms and general health status. The potential risks and benefits of surgery should be explained in detail to the patient and family before making a decision.

Gemini Advanced 1.5. Pro:

Scoliosis surgery is not a suitable treatment option for everyone. The decision for surgery should be made carefully, taking into account the patient's condition and the characteristics of the curve.

Suitable candidates for scoliosis surgery usually have the following characteristics:

- High Degree of Curvature: Generally, patients with a curvature of 45-50 degrees and above are considered suitable candidates for surgery. This degree of curvature can progress over time and cause serious health problems such as respiratory problems, heart problems and severe pain.
- Progressive Curvature: In young people with ongoing bone development, surgery may be recommended if the curve progresses rapidly. Progression of the curve despite corset treatment may also be an indication for surgery.
- Severe Pain: Patients who experience severe pain due to scoliosis and cannot control this pain with medication or physiotherapy may be suitable candidates for surgery.
- Cosmetic Concerns: In some patients, the appearance disorder caused by scoliosis can lead to serious psychological problems. In these cases, surgery may be considered to improve the patient's quality of life.
- Respiratory or Heart Problems: In rare cases, severe scoliosis can affect respiratory or cardiac function. In such cases, surgery may be necessary to protect the functions of vital organs.
- Immature Skeleton: Surgery is usually performed in young people whose bone development is incomplete. As the bones are fully mature in adults, the surgery may become more complex and the success rate may decrease.

Other factors to be considered when deciding on surgery:

- Age and general health status of the patient: The risks of surgery may be higher in elderly patients and those with poor general health.
- Failure of non-surgical treatment methods: Surgery is usually recommended if non-surgical methods such as corset therapy have been tried and failed.
- Patient expectations and motivation: The patient and his/her family should be informed in detail about the risks and benefits of surgery and the decision for surgery should be made jointly.

Remember, the decision for scoliosis surgery should always be considered individually. Taking the above factors into consideration, your doctor will determine the most appropriate treatment option for you.

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Suitable candidates for scoliosis surgery are usually people with the following criteria

1. Severe curvature: People with a spinal curvature of 40-50 degrees or more

2. Progressive curvature: Patients whose spinal curvature progresses rapidly and does not respond to other treatment methods

3. Pain and Loss of Function: Patients experiencing severe back pain or loss of function affecting daily activities

4. Failure of Other Treatment Methods: Patients who do not benefit from non-surgical treatment methods such as physiotherapy, corset use

Since each patient's condition is different, the decision for scoliosis surgery should be made by the doctor, taking into account the patient's general health condition, age and severity of the scoliosis.

6. What is the best age for scoliosis surgery?

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The optimal age for scoliosis surgery depends on the type of scoliosis, degree of curvature and growth potential of the patient. The aim is to control the spinal deformity, not to adversely affect growth and to stop progression. As a general rule, scoliosis surgery is performed when growth is nearing completion or when the curvature leads to serious health problems.

Evaluation by Age

1. Children (10-14 years)

- Adolescent Idiopathic Scoliosis (AIS): It is the most common type of scoliosis and is usually seen in this age group.

- The most suitable period for surgery is when growth is largely complete but spinal flexibility is preserved.

- Girls: 1-2 years after menarche usually represents a period of reduced growth potential.

- Boys: Growth is usually completed later than in girls, so follow-up periods are longer.

2. Young Adults (15-25 years)

- The growth of the spine is largely complete.

- Scoliosis surgery in this period usually gives more stable results, because the risk of displacement of the implants during growth is low.

3. Adults (25 years and older)

- Scoliosis surgery is less favoured in this age group, however:

- o It can be performed if there is pain, nerve compression, or severe deformities affecting organ functions.

- o In adults, postoperative recovery may be longer and surgical risks may increase.

4. Young Children (under 10 years of age)

- Scoliosis surgery is rarely performed in this age group. This is because it is important to maintain spinal mobility during growth and to control the deformity before it progresses.
- The curvature is managed using growth-friendly techniques (for example, magnetically controlled rods or growth rods).

Optimal Timing for Surgery

- Cobb Angle: When the Cobb angle of curvature reaches 40°-50°, surgery is considered.
- Growth Potential: Growth potential is assessed using Risser's sign (calcification criterion) and bone age.
 - o Surgery usually works best when growth is close to completion.
- Symptoms: If there is severe pain, breathing difficulties or rapidly progressive curvature, surgery may be considered regardless of age.

Outcome

The 'best age' for scoliosis surgery depends on individual factors. Surgery performed in adolescence when growth is complete usually gives the best results. However, the timing of surgery is determined individually, taking into account the patient's degree of curvature, symptoms and general health.

Gemini Advanced 1.5. Pro:

It is not possible to say anything definite about the 'best age' for scoliosis surgery, because this depends on the individual patient's condition. However, in general, adolescence is considered the ideal time for scoliosis surgery.

Here are the reasons why this period is preferred:

- Bone Development: During adolescence, the bones are still in the growth phase and this helps the spine to fuse and straighten better after surgery.
- Progression of Curvature: Scoliosis can progress rapidly during adolescence. Early surgery can stop the progression of the curve and prevent more serious deformities.
- Long Term Results: Surgeries performed during adolescence usually give better long-term results and improve the patient's quality of life.

So, is every adolescent suitable for scoliosis surgery?

No, they are not. Not only age, but also factors such as the degree and type of curvature, general health status of the patient and skeletal maturity are taken into consideration when deciding on surgery.

Skeletal Maturity:

- Risser's Sign: It is a method used to assess skeletal maturity. By looking at the X-ray image of the hip bone, it is determined how complete the bone development is. The higher the Risser sign, the higher the skeletal maturity.

- Growth plates: Growth continues until the growth plates at the ends of the bones close. If the growth plates are open, it means that the spine can continue to grow after surgery and the curvature may recur.

Ideal age range for surgery:

Generally, the ideal age range for scoliosis surgery is 10-13 years for girls and 12-15 years for boys. However, this is not valid for every patient.

Important Note: The decision for scoliosis surgery should always be considered individually. Your doctor will evaluate your child's condition in detail and decide whether surgery is necessary and the most appropriate timing.

Microsoft Copilot:

The optimal age for scoliosis surgery varies depending on various factors such as the patient's growth status, progression of the curvature and general health status. In general, the best age range for scoliosis surgery is between 10-18 years

. Since the spine is still growing at this age, surgical intervention can be more effective and stop the progression of the curvature

However, each patient's situation is different and the most appropriate timing should be determined after a detailed assessment with your doctor.

7. How long does it take to recover after scoliosis surgery?

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The recovery time after scoliosis surgery varies depending on the patient's age, general health, surgical method and the severity of the scoliosis. However, in general, the recovery process is evaluated in several stages:

1. Hospital Stay

- Average: 3-7 days.

- In the first days after the operation, pain management, wound care and light movements are started.

- Patients are usually able to sit and take short walks within 3-4 days.

2. First 2-4 Weeks: Early Recovery Period

- The patient rests at home after discharge.

- Daily activities are increased slowly, but heavy lifting and intense physical activities are avoided.

- Wound healing is largely completed during this period.

3. 3-6 Months: Functional Recovery

- Most patients in this period:
 - o Can return to work or school.
 - o Can perform light physical activities.
- However, the surgeon's approval is required before starting activities that require high physical effort such as sports.

4. Full Recovery: 6-12 Months

- The process of complete fusion of the spine usually takes 6-12 months.
- During this time:
 - o The spine is expected to stabilise and the implants are expected to settle.
 - o Fusion status is monitored with regular controls.

Return to Daily Activities

- Light activities: Within 2-4 weeks.
- Return to school/work: within 4-6 weeks (jobs that do not require physical effort).
- Sports and heavy physical activities: After 6-12 months, with the approval of the surgeon.

Factors Affecting Recovery

- Age: Younger individuals usually recover faster.
- Physical Condition: Maintaining a healthy lifestyle prior to surgery can speed recovery.
- Type of Surgery: Recovery time may be shorter in minimally invasive surgeries.
- Rehabilitation and Physical Therapy: Regularly performing the recommended exercises after surgery has a positive effect on the healing process.

Conclusion

Returning to daily life after scoliosis surgery usually begins within a few weeks, but the full recovery process takes about 6-12 months. During this period, it is important that the patient follows the surgeon's recommendations and has regular check-ups.

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Although the recovery process after scoliosis surgery varies from person to person, it generally consists of several stages and full recovery can take up to one year. Here is a general summary of the recovery process after scoliosis surgery:

Hospitalisation:

- You will usually stay in the hospital for 5-7 days after the surgery.
- During this period, pain control is provided, your wound is cared for and walking exercises are started.
- You will be taught movement and breathing exercises by a physiotherapist.

First 4-6 Weeks:

- You will continue to rest at home, but short walks and light activities are recommended.
- Painkillers can be used.
- Wound care should be done regularly.
- Return to school or work usually occurs after 4-6 weeks, but heavy lifting and strenuous activities should be avoided.

6 Weeks - 3 Months:

- Pain decreases and mobility improves.
- Physiotherapy is continued and the exercise programme is gradually increased.
- Most daily activities become possible.

3-6 Months:

- Most patients can return to their normal activities during this period.
- It is important to get your doctor's approval to start sports activities.
- It may take up to 6 months for the spine to completely fuse.

6 Months - 1 Year:

- The healing process continues and the spine becomes stronger.
- Recovery is monitored with regular check-ups.
- After one year, most patients are fully recovered and can return to normal life.

Factors affecting the healing process:

- Age
- General health status
- Degree of curvature

- Type of surgery
- Postoperative care
- Compliance with physiotherapy

To speed up the healing process:

- Follow your doctor's instructions.
- Take your medication regularly.
- Do not skip physiotherapy sessions.
- Get enough rest and eat a healthy diet.
- Do not smoke.

Remember, each individual's healing process is different. Your doctor will create a special recovery plan for you and will follow you closely throughout the process.

Microsoft Copilot:

The recovery time after scoliosis surgery varies depending on the type of surgery performed and the general health status of the patient. In general, the recovery process can be summarised as follows:

1. Duration of Hospital Stay: The duration of hospital stay after surgery is usually between 3-7 days
2. First Two Weeks: During the first two weeks, patients usually rest and take medication for pain management. Light activities can be done during this period
3. First Months: During the first 3-6 months, patients can gradually return to their normal activities. Physiotherapy plays an important role in this process
4. Full recovery: The full recovery period usually varies between 6-12 months. During this period, patients should maintain their spine health by doing the exercises recommended by their doctors.

Each patient's healing process may be different, so it is important to follow your doctor's recommendations.

8. Which techniques are used during scoliosis surgery?

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The techniques used in scoliosis surgery are selected according to the severity of the curvature, the type of scoliosis, the age and general health of the patient. Modern scoliosis surgery uses advanced surgical methods and implants to correct and stabilise the spinal deformity.

1. Spinal Fusion (Spinal Fusion)
 - It is the most commonly used method.

- The vertebrae in the curvature area of the spine are fused together (fusion).
- The spine is straightened and stabilised using metal rods, screws and hooks.
- Graft materials are used during the fusion process:
 - o Autogenous graft: The patient's own bone (e.g. from the pelvis).
 - o Allogeneous graft: bone from a donor.
 - o Synthetic materials: Biological materials to support fusion.

2. Pedicle Screw Systems

- Screws are inserted into the spine and connected with metal rods to align the spine.
- Advantages:
 - o Better stabilisation.
 - o More effective correction of the curvature.

3. Growing Rods

- It is suitable for children and aims to control curvature while allowing spinal growth.
- The rods are periodically lengthened by surgical intervention or lengthening is performed non-surgically using magnetically controlled rods (MAGEC).

4. Vertebral Body Tethering (VBT)

- It is a minimally invasive procedure.
- A cable system is placed in the curvature area of the spine.
- The curvature is corrected by tightening the cables.
- It is particularly favoured in children with growth potential because, unlike fusion, it preserves spinal mobility.

5. Osteotomy

- If the spine is severely deformed, some of the bones are removed or reshaped to correct the curvature.
- Techniques such as Ponte osteotomy or pedicle subtraction osteotomy (PSO) can be used in more advanced cases.

6. Minimally Invasive Techniques

- These are surgical procedures performed through smaller incisions.
- It is applied by laparoscopic or endoscopic methods.
- Advantages:

- o Less pain.
- o Shorter recovery time.
- o Smaller surgical scars.

7. Anterior and Posterior Approaches

- Posterior approach (from the back): The most commonly used method. Screws, rods and hooks are inserted from behind the spine.
- Anterior approach (from the front): Usually used in thoracic or lumbar scoliosis. The spine is accessed through the ribs.

8. Neuromonitoring

- Continuous nerve monitoring is performed to ensure the safety of the nerves during the operation.
- Prevents damage to the spinal cord or nerves.

9. Robotic Surgery and Navigation

- Robotic systems or navigation technology are used to ensure precision during surgery.
- Improves implant placement accuracy and reduces the risk of complications.

Conclusion

The techniques used in scoliosis surgery are selected according to the experience of the surgeon, the type of scoliosis and the characteristics of the patient. The common goal of these methods is to stabilise the spine, correct the curvature and improve the patient's quality of life. Surgical planning is performed individually for each patient.

Gemini Advanced 1.5. Pro:

The techniques used in scoliosis surgery vary according to factors such as the degree and location of the curvature, the age and general health status of the patient. However, in general, the main techniques used in scoliosis surgery are as follows:

1. Spinal Fusion:

- It is the most commonly used technique in scoliosis surgeries.
- The aim is to permanently fuse the vertebrae together to correct the curvature and stabilise the spine.
- Procedure:
 - o A surgical incision is made in the spine.
 - o The vertebrae are fixed with implants such as screws, rods and hooks to correct the curvature.

- o Bone grafts are placed between the vertebrae. These grafts help the vertebrae to fuse and become a single bone over time.

- Access Methods:

- o Posterior approach: It is the most commonly used method. The incision is made on the back.

- o Anterior approach: The incision is made in the chest or abdomen. It provides better correction in some cases.

- o Combination approach: Both posterior and anterior approaches can be used together.

2. Vertebral Body Tethering (VBT):

- It is a non-fusion technique.

- It is used in the treatment of scoliosis in growing children.

- Procedure:

- o Screws are inserted into the side of the spine.

- o The screws are tied together with a flexible cord or tape.

- o This cord helps to correct the curvature by guiding the growth of the spine.

3. Growing Rods:

- Used in very young children.

- Procedure:

- o Rods are inserted into the spine and lengthened at regular intervals to accommodate the growth of the child.

- o In this way, it is aimed to control the curvature without preventing the growth of the spine.

4. Osteotomy:

- It is a technique used to correct severe curvatures.

- Procedure:

- o The curvature is corrected by making incisions in one or more bones of the spine.

- o The spine is then stabilised with a spinal fusion technique.

Other technologies used during surgery:

- Navigation systems: Help surgeons to better visualise the spinal anatomy and place implants more accurately.

- Neuromonitoring: Reduces the risk of nerve damage by monitoring the function of nerves during surgery.

- Minimally invasive techniques: These are surgeries performed through smaller incisions. They can shorten the healing process and reduce the risk of complications.

Your surgeon will decide which technique to use by assessing your condition. It is important to get detailed information about the surgery and ask all your questions before the operation.

Microsoft Copilot:

Some of the techniques used during scoliosis surgery are as follows:

1. Spinal Fusion: Fusion of the vertebrae to correct the curvature of the spine and stop its progression. The vertebrae are fused using metal rods, screws and bone graft.

2. Vertebral Body Tethering (VBT): Screws are inserted into the vertebrae and connected by a cable. The tension on the cable straightens the spine and the spine straightens further as growth continues

3. Hemi-Epiphysiodesis: It is a procedure to stop abnormal growth on one side of the spine. This can help to correct the curvature over time

4. Hemivertebra Resection: It is the removal of abnormally shaped vertebrae in the spine. This procedure is usually performed in young children and helps to straighten the spine

5. Growing Rod Operation: In order not to damage the growth tissues of the spine, a spine- or rib-based system is used. Rods are attached with screws or hooks to the spine or ribs above and below the curvature

These techniques are selected depending on the patient's condition and the severity of the scoliosis. As each patient's case is different, it is important to have a detailed assessment with your doctor to determine the most appropriate surgical method.

9. When can I return to my daily activities after scoliosis surgery?

ChatGPT 4o :

The process of returning to daily activities after scoliosis surgery depends on the patient's age, general health condition, type of surgery and the speed of recovery. Generally, this process proceeds in several stages:

1. First 2-4 Weeks: Rest and Light Activities

- What can be done?

- o Light housework (e.g. preparing meals).

- o Short walks (can be increased on doctor's advice).

- o Rest by changing position in a chair or bed.

- What should be avoided?

- o Heavy lifting (usually over 5kg is prohibited).

- o Sitting or bending for long periods of time.

- o Strenuous physical activities.

- During this period, the patient usually rests at home and is limited to light daily activities.

2. 4-6 Weeks: Return to School or Work

- Jobs that do not require physical effort:

- o Desk work or light tasks can be done.

- o The most important thing to be aware of in the school environment is to avoid sitting for long periods of time and to stand up at regular intervals.

- Driving: Driving can be started with the doctor's approval, but is usually recommended after 4-6 weeks.

3. 3-6 Months: Normal Daily Activities

- The patient can return to most daily activities during this period:

- o Activities such as shopping and walking can be done easily.

- o Light sports or low-impact exercises such as yoga can be started (with the doctor's approval).

- Movements such as heavy lifting, high-impact sports and excessive bending may still need to be avoided.

4. 6-12 Months: Return to Full Physical Activity

- Since the complete fusion of the spine usually takes 6-12 months, the return to full physical activity takes place at the end of this period.

- Sports: Low-impact sports such as swimming and cycling can be done after the 6th month, while high-impact sports (football, running) can usually be done after the 9th-12th month.

- Heavy work: This period may be longer for occupations that require heavy lifting.

Factors affecting the return process

1. Type of surgery: The recovery period is usually shorter in surgeries performed with minimally invasive methods.

2. Physical Condition: Patients who are in good physical condition before surgery recover faster.

3. Rehabilitation: Regular participation in physical therapy and exercise programmes can accelerate the process of returning to daily activities.

Doctor Control is Important

- Which activities can be started and when will be determined during the medical check-ups, depending on the fusion process of the spine and the general recovery.

Summary: Most patients can return to light daily work within 4-6 weeks after scoliosis surgery and to more intensive activities within 3-6 months. A return to full physical activity requires 6-12 months. Following the doctor's instructions throughout the recovery process reduces the risk of complications and accelerates recovery.

Gemini Advanced 1.5. Pro:

The process of returning to daily activities after scoliosis surgery varies from person to person and depends on how your recovery progresses. In general, however, most patients can return to their basic daily activities within the first few weeks after surgery.

Here is a general timeline for returning to daily activities after scoliosis surgery:

First 4-6 Weeks:

- During this period, you should focus on rest and avoid heavy lifting.
- Light activities such as walking are recommended and should be gradually increased.
- Returning to school or light work is usually possible after 4-6 weeks.
- However, you should avoid sitting or standing for long periods of time.
- Activities such as heavy housework, gardening or sports should be avoided.

6 weeks - 3 months:

- Your pain will decrease and your mobility will increase.
- You will be able to do most of your daily activities.
- It is important that you continue with physiotherapy and gradually increase your exercise programme.
- You can start light sports activities with the approval of your doctor.

3-6 Months:

- Most patients can return to their normal activities during this period.
- You should consult your doctor before starting more intense sports activities or heavy work.

6 Months - 1 Year:

- Your healing process will continue and your spine will get stronger.
- After one year, most patients are fully recovered and return to normal life.

Factors affecting return to daily activities:

- Your age
- Your general state of health
- Degree of curvature
- Type of surgery
- Postoperative care
- Compliance with physiotherapy

Tips

- Follow your doctor's instructions and pay attention to his or her recommendations.
- Take your medication regularly to keep your pain under control.
- Keep up with your physiotherapy sessions and do your home exercises.
- Get enough rest and eat a healthy diet.
- Listen to your body and do not overdo it.
- Gradually increase your activity level.
- Contact your doctor if you have any concerns.

Remember, everyone's recovery process is different. Your doctor will create a personalised recovery plan and guide you on when you can return to daily activities. Be patient and focus on your recovery process.

Microsoft Copilot:

The time to return to daily activities after scoliosis surgery varies depending on the type of surgery performed and the speed of the patient's recovery. In general, the recovery process can be summarised as follows:

1. First 2 Weeks: During the first two weeks after surgery, patients rest and use medication for pain management. Light activities can be done during this period
2. First 3 Months: During the first 3 months, patients can gradually return to their normal activities. However, movements such as heavy lifting, bending and turning should be avoided
3. 6-12 Months: The full recovery period usually varies between 6-12 months. During this period, patients should maintain their spine health by doing the exercises recommended by their doctors.

Each patient's recovery process may be different, so it is important to follow your doctor's recommendations.

10 What is the success rate of scoliosis surgery?

The success rate of scoliosis surgery varies depending on the type of scoliosis and the general health of the patient. In general, scoliosis surgeries have high success rates:

1. Adolescent Idiopathic Scoliosis (AIS): The success rate of surgery for this type of scoliosis is usually around 85
2. Congenital Scoliosis: The success rate of congenital scoliosis surgeries is approximately 70

Postoperative recovery and physiotherapy play an important role in increasing the success of the surgery

10. What is the success rate of scoliosis surgery?

ChatGPT 4o :

Scoliosis surgery offers highly successful results with modern surgical techniques and equipment. The success rate depends on factors such as the type of scoliosis, the degree of curvature, the patient's age and general health status. In most cases, the main goals of surgery - correction of spinal curvature, halting progression and improving quality of life - are successfully achieved.

General Success Rate

- The success rate of scoliosis surgery usually varies between 85-95%.
- In successful surgeries
 - o The curvature of the spine is improved by 50-80%.
 - o Progression of the curvature is stopped.
 - o The majority of patients report a significant improvement in quality of life after surgery.

Factors Determining Success

1. Scoliosis Type

- Adolescent Idiopathic Scoliosis (AIS):
 - o The success rate is quite high in this type.
 - o The risk of progression of the curve after the completion of growth is minimal.
- Neuromuscular Scoliosis:
 - o The success rate may be slightly lower in scoliosis due to neuromuscular diseases, because the curve is usually more complex in these patients.
- Degenerative Scoliosis:
 - o The success rate for scoliosis in adults usually focuses on pain control and stabilisation.

2. Degree of Curvature

- The larger the Cobb angle (e.g. 70° and above), the more complex the surgery may be. However, with modern surgical methods, high success rates can be achieved even in severe curvatures.

3. Age

- In young patients, healing and postoperative union are faster, so the success rate is higher.

4. Surgical Technique and Surgeon's Experience

- The complication rate decreases and the success rate increases in surgeries performed by an experienced surgeon.

- The use of modern technologies such as robotic surgery and neuromonitoring increases success.

Success Criteria

1. Curvature Correction:

o After surgery, the curvature of the spine is significantly corrected.

2. Stabilisation of the curvature:

The curvature does not progress after surgery.

3. Improvement of Quality of Life:

o Reduced pain and increased physical activity capacity.

4. Low Complication Rate:

o Complications are usually minimal and can be managed with appropriate interventions.

Effect of Complications on Success

- The complication rate is around 5-10% and usually includes conditions such as infection, implant loosening or inadequate union.

- Most complications, when detected and treated early, do not affect the overall success.

Conclusion: Scoliosis surgery has high success rates when performed with appropriate patient selection and correct techniques. Most patients can continue their lives after surgery with corrected curvature, improved quality of life and halted progression of the curvature. However, the success rate for each patient may vary depending on individual factors.

Gemini Advanced 1.5. Pro:

The success rate of scoliosis surgery varies depending on many factors. These include the degree of curvature, the type of scoliosis, the patient's age, general health status, the surgeon's experience and postoperative care. In general, however, scoliosis surgeries have high success rates.

In most studies, scoliosis surgeries are reported to be 80-90% successful. This means that the surgery significantly corrects the curve and improves the patient's quality of life.

Factors affecting success:

- The degree of curvature: The larger the curvature, the more difficult it may be to correct it completely with surgery.
- Type of scoliosis: Some types of scoliosis respond better to treatment than others.
- Age of the patient: Younger patients may have better results after surgery because the bones are still growing.
- General health status: Patients with good general health have a better chance of success.
- Surgeon's experience: A surgeon specialised and experienced in scoliosis surgery increases the success rate.
- Postoperative care: Careful care and rehabilitation after surgery accelerates recovery and increases the chances of success.

What does it mean if the surgery is successful?

The success of scoliosis surgery is usually evaluated according to the following criteria:

- Correction of the curvature: The aim of the surgery is to correct the curve as much as possible.
- Reduction of pain: Scoliosis surgery significantly reduces or completely eliminates pain in most patients.
- Improved quality of life: After surgery, patients have better posture, more mobility and less pain. This improves their quality of life.
- Prevention of complications: A successful surgery prevents the development of complications such as infection, nerve damage or implant problems.

Scoliosis surgery is an effective treatment option to correct spinal deformity and improve quality of life. However, as with any surgical procedure, there are risks and success cannot be guaranteed. Discussing the risks and benefits in detail with your doctor before surgery will help you to set realistic expectations about the surgery and make an informed decision.

Microsoft Copilot:

The success rate of scoliosis surgery depends on the type of scoliosis and the general health of the patient. In general, scoliosis surgeries have high success rates:

1. Adolescent Idiopathic Scoliosis (AIS): The success rate of surgery for this type of scoliosis is usually around 85

2. Congenital Scoliosis: The success rate of congenital scoliosis surgeries is approximately 70

Postoperative recovery and physiotherapy play an important role in increasing the success of the surgery

11. What is the possibility of recurrence of scoliosis after surgery?

ChatGPT 4o :

After scoliosis surgery, the likelihood of the curve recurring is usually low, but not completely eliminated. The risk of recurrence depends on the stabilisation of the spine after surgery, the fusion process and the underlying type of scoliosis.

Probability of Recurrence of Scoliosis

- Adolescent Idiopathic Scoliosis (AIS):

- o The risk of recurrence in this type is very low (1-5%).
- o With appropriate surgical technique and complete union, the curve is not expected to progress again.

- Neuromuscular Scoliosis:

- o The risk of recurrence is higher due to underlying neurological or muscular problems.

- Degenerative Scoliosis:

- o With age, degenerative changes may occur and new curvatures may form in the spine.

Factors Increasing the Risk of Recurrence

1. Inadequate fusion:

- o If complete fusion between the vertebrae is not achieved, the curvature may progress after surgery.
- o In case of pseudarthrosis (failure to fuse), stability cannot be achieved and repeat surgery may be required.

2. Implant Problems:

- o Loosening or breakage of screws, rods or hooks.
- o Slippage of the implants.

3. Growing Children:

- o If surgery is performed during growth, new curvatures may occur during growth.
- o For this reason, special methods such as growth rods are used in children.

4. Heavy Physical Activity:

- o Overloading the spine or wrong movements in the postoperative period may increase the risk of recurrence.

5. Neurological or Muscle Problems:

- o Underlying problems such as neuromuscular scoliosis may affect the stability of the spine after surgery.

Recommendations to Reduce the Risk of Recurrence

1. Preoperative and Postoperative Planning:

- o The risk of recurrence can be reduced with appropriate surgical technique and meticulous planning.

2. Rehabilitation and Physical Therapy:

- o It is important to start physical activities at the right time and in the right way after surgery.

3. Regular Follow-up:

- o Stability of the surgical site should be checked regularly with radiological imaging.

4. Avoiding Heavy Loads:

- o Excessive load on the spine should be avoided in the postoperative period.

Treatment in case of recurrence

- If recurrence occurs, revision surgery is usually required.
- In mild cases, physiotherapy or bracing may be sufficient.

Conclusion

The likelihood of recurrence after scoliosis surgery is generally low. If complete union is achieved and appropriate surgical techniques are applied, most patients have a stable spine in the long term. However, in some special cases, especially due to inadequate fusion or implant problems, the curve may progress again. Regular medical check-ups and compliance with recommendations minimise the risk of recurrence.

Gemini Advanced 1.5. Pro:

The likelihood of recurrence after scoliosis surgery varies depending on various factors. The good news is that, thanks to modern surgical techniques and advanced implants, recurrence rates are considerably lower than in the past.

Nevertheless, in some cases, the curve may recur after scoliosis surgery. Here are some factors that affect scoliosis recurrence:

Patient Related Factors:

- Age: The risk of recurrence is higher at a young age, especially in surgeries performed before skeletal development is complete. Because as the spine continues to grow, new curvatures may form above or below the fusion area.
- Degree and type of curvature: The larger the preoperative curve and the more complex the type of scoliosis, the higher the risk of recurrence.
- General health status: Some health problems can increase the risk of recurrence by negatively affecting the fusion of the bones and healing. For example, connective tissue diseases, nutritional disorders or hormonal problems.
- Compliance with postoperative care and physical therapy: Failure to follow the doctor's instructions after surgery, not using a corset or not attending physical therapy regularly may increase the risk of recurrence.

Factors Related to Surgery:

- Surgical technique: The surgical technique used and the type of implants may affect the risk of recurrence.
- Success of fusion: Incomplete fusion of the vertebrae during surgery increases the risk of recurrence.
- Postoperative complications: Complications such as infection, implant fracture or dislocation can increase the risk of recurrence.

What can be done to reduce the possibility of recurrence?

- Choosing an experienced surgeon: An experienced surgeon who specialises in scoliosis surgery reduces the risk of recurrence.
- Following postoperative instructions: It is important to pay attention to your doctor's recommendations, use a corset and go to physiotherapy regularly.
- Adopting a healthy lifestyle: Eating a balanced diet, exercising regularly and not smoking can reduce the risk of recurrence by maintaining bone health.
- Regular check-ups: It is important to go to the doctor regularly after surgery to diagnose possible problems early and reduce the risk of recurrence.

Although the likelihood of recurrence after scoliosis surgery is low, it is important to be aware of these risk factors and take the necessary precautions. If you have any concerns, do not hesitate to contact your doctor.

Microsoft Copilot:

The possibility of recurrence of scoliosis after scoliosis surgery varies depending on various factors. In general, the recurrence rate after scoliosis surgery can vary between 10% and 40

Factors affecting the risk of recurrence are as follows:

1. Severity of the curvature: More severe curvatures may have a higher risk of recurrence
2. Type of Surgery: Surgical techniques and implants used may affect the risk of recurrence
3. Age of the patient: In younger patients, the risk of recurrence may be lower because the spine is still growing
4. Surgeon's Experience: Operations performed by experienced surgeons can reduce the risk of recurrence

Regular postoperative check-ups and following your doctor's recommendations play an important role in reducing the risk of recurrence.

12. How long does scoliosis surgery take?

ChatGPT 4o :

The duration of scoliosis surgery varies depending on the severity of the curvature, the type of scoliosis, the surgical method and the scope of the procedures to be performed. In general, scoliosis surgery takes between 4 and 8 hours. However, this period may be shorter or longer in some cases.

Factors Affecting Duration of Surgery

1. Severity of curvature and number of vertebral segments

- In cases of mild scoliosis, the operation time is shorter (4-5 hours) because fewer segments of the spine are intervened.
- In severe cases of scoliosis, more vertebral segments are corrected and stabilised, so the surgery may take longer (6-8 hours or more).

2. Surgical Approach

- Posterior Approach (from the back):

- o It is the most commonly used method.
- o It usually takes 4-6 hours.

- Anterior Approach (from the front):

- o It is a less common method, generally preferred in thoracic or lumbar region curves.
- o Duration usually varies between 5-8 hours.

- Minimally Invasive Techniques:

- o In less invasive surgeries, the duration may be shorter (3-5 hours).

3. Techniques Used

- Spinal Fusion: It is a method used in most scoliosis surgeries and usually takes longer.
- Growing Rods: This technique used in children is usually completed in a shorter time.
- Vertebral Body Tethering (VBT): It is a minimally invasive method and may shorten the surgical time.

4. Implant Placement and Correction Procedures

- It takes time to insert screws, rods and hooks into the vertebrae.
- Depending on the degree of curvature, this process may become more complicated.

5. Experience of the surgical team

- An experienced team can manage the surgical process more efficiently and shorten the duration.

6. General Health Status of the Patient

- Underlying medical conditions or risks of complications during surgery may cause the surgery to take longer.

In addition to the Duration of Surgery:

- Preparation Time: Preparation of the patient before surgery (anaesthesia, sterilisation, etc.) takes approximately 1 hour.
- Postoperative Awakening: After the operation, the patient is awakened from anaesthesia and this process usually takes 30-60 minutes.

Result

Scoliosis surgery is usually completed between 4-8 hours. This time may be longer in severe curvatures or more extensive interventions. Before the operation, your surgeon will give you detailed information about the operation time and process.

Gemini Advanced 1.5. Pro:

The duration of scoliosis surgery varies depending on many factors. These factors include the degree of curvature, type of scoliosis, age of the patient, general health status, experience of the surgeon, surgical technique used and complexity of the surgery.

In general, scoliosis surgeries can take between 4 and 8 hours. However, in some cases, the surgery may take shorter or longer.

Here are some factors that affect the duration of surgery:

- The degree of curvature: The larger the curvature, the longer the surgery may take.
- Type of scoliosis: Some types of scoliosis require more complex surgery than others, which can increase the duration of surgery.

- Surgical technique used: Different surgical techniques such as spinal fusion, VBT, growing rods or osteotomy can be used and each technique has its own duration.
- Complexity of the surgery: The condition of the spine, the patient's anatomy and possible complications can affect the complexity and duration of the surgery.
- Surgeon's experience: An experienced surgeon can perform the surgery more quickly and efficiently.

You can get information about the estimated duration of the operation by contacting your doctor before the operation. Keep in mind that this is only an estimate and unexpected situations may arise during surgery and may affect the duration.

Microsoft Copilot:

The duration of scoliosis surgery varies depending on the complexity of the cases and the surgical technique used. In general, scoliosis surgery takes between 4 and 8 hours. In more complex cases this may be longer.

13. Is physiotherapy necessary after scoliosis surgery?

ChatGPT 4o :

Yes, physical therapy after scoliosis surgery is often an important part of the recovery process. Physical therapy is useful to promote stabilisation of the spine, increase muscle strength, restore flexibility and speed return to daily activities. However, whether physical therapy is needed depends on the patient's condition and the recovery process after surgery.

Objectives of Physical Therapy

1. Increasing muscle strength and endurance:

- o The muscles around the spine may weaken after surgery. Physiotherapy helps to strengthen these muscles.

2. Improving Posture and Balance:

- o Correcting posture is important to adapt to the new position of the spine after surgery.

3. Reducing Pain:

- o Gentle movement and stretching exercises can help relieve pain and stiffness after surgery.

4. Restoring Flexibility and Mobility:

- o Physiotherapy aims to increase the limited range of motion after surgery.

5. Accelerating Return to Daily Activities:

- o Physical therapy is of critical importance, especially for patients who will return to heavy physical activities or sports.

When to Start Physical Therapy

1. Early Period (0-4 weeks):

- o Rest and light walks are generally recommended during this period.
- o Activities that may damage the surgical site are avoided.

2. 4-12 Weeks:

- o Light exercises are started.
- o Exercises to increase muscle strength can be applied.
- o Posture-correcting exercises can be done slowly under the guidance of a physiotherapist.

3. 3-6 Months:

- o More intensive exercise programmes are initiated.
- o Movements that increase flexibility, strength and balance are emphasised.

4. 6-12 Months:

- o Sports or physically intensive activities can be done (with the approval of the doctor and physiotherapist).

Conditions where physiotherapy is not necessary

Some patients can return to their daily activities without the need for physiotherapy, especially in surgeries for mild curvatures. However, physiotherapy is generally recommended for severe deformities or surgeries involving long segments.

Physical Therapy Methods

1. Exercises:

- o Light aerobic exercises (e.g. walking, swimming).
- o Exercises that strengthen the muscles around the spine.

2. Manual therapy:

- o Gentle manipulations to relieve movement restrictions.

3. Posture Training:

- o Teaching correct posture and sitting positions.

4. Pain Management Techniques:

- o Massage or heat/cold applications.

Outcome

Physiotherapy is greatly beneficial for a faster and more effective recovery after scoliosis surgery. However, the need and programme of physiotherapy for each patient should be determined according to the recommendations of the surgeon and physiotherapist. Regular participation in the physiotherapy programme during the recovery process increases the success of long-term results.

Gemini Advanced 1.5. Pro:

Yes, physiotherapy after scoliosis surgery is absolutely necessary. In fact, it is vital for the success of the surgery and long-term results.

Here is the importance of physiotherapy after scoliosis surgery:

- Reduces pain: Helps reduce postoperative pain and discomfort.
- Increases mobility: Restores spinal mobility and flexibility.
- Strengthens muscles: Supports the spine by strengthening the back and abdominal muscles that weaken after surgery.
- Corrects posture: Teaches correct posture and helps stabilise the spine.
- Facilitates return to daily activities: It allows you to perform daily activities safely and effectively.
- Prevents complications: Helps prevent complications such as blood clots, lung problems and muscle atrophy.

What does the physiotherapy programme include?

The physiotherapy programme after scoliosis surgery varies according to individual needs. However, it usually includes the following:

- Breathing exercises: To increase lung capacity and prevent breathing problems.
- Stretching exercises: To improve spinal flexibility and mobility.
- Strengthening exercises: To strengthen the muscles of the back, abdomen and legs.
- Posture exercises: To maintain correct posture and spinal balance.
- Walking exercises: To increase endurance and improve walking skills.
- Functional exercises: To facilitate daily activities.

When does physiotherapy start?

Physiotherapy is usually started in the first few days after the operation. During your hospital stay, the physiotherapist will teach you basic exercises and encourage you to walk. You will need to continue physiotherapy after discharge.

How long does physiotherapy last?

The duration of physiotherapy varies from person to person, but it can usually last several months. Your doctor and physiotherapist will create a tailor-made programme according to your recovery process.

Physiotherapy after scoliosis surgery is very important for a successful recovery and long-term health. Following your physiotherapist's instructions and doing your exercises regularly will help strengthen your spine, reduce your pain and help you return to your daily activities faster.

Microsoft Copilot:

Yes, physiotherapy plays a very important role in the recovery process after scoliosis surgery. Physiotherapy includes individualised exercise programmes to strengthen the muscles around the spine, increase flexibility and restore normal movement patterns.

Postoperative physiotherapy helps patients return to their daily activities more quickly and safely. It is also effective in reducing the risk of postoperative complications

14. How long does the pain last after scoliosis surgery?

ChatGPT 4o :

Pain after scoliosis surgery is a natural part of the healing process. However, the duration and intensity of pain varies depending on the type of surgery, the patient's individual pain tolerance and the speed of recovery. Thanks to modern surgical methods and pain management techniques, most patients can control pain well.

Pain Process and Periods

1. First Postoperative Days (0-7 Days)

- Severe pain: The pain is most intense in the first few days. Since you will usually be in hospital during this period, painkillers are given intravenously or orally.
- Pain management: Patient-controlled analgesia (PCA) pumps or epidural painkillers are commonly used.

2. First 2-4 Weeks

- Moderate pain: Pressure, muscle spasms and stiffness may be felt at the operation site. However, the intensity of the pain decreases day by day.
- Pain can be controlled with daily painkillers.
- Light walks and movements help to reduce pain.

3. 4-12 Weeks

- Mild pain: Pain is usually minimal during this period. However
 - o Standing for a long time.

- o Sitting in the wrong position.

- o Excessive physical activity can trigger pain.

- As the muscles heal and the inflammation in the operation area decreases, the pain gradually subsides.

4. 3-6 Months and After

- Most patients become pain-free during this period.

- However: Mild discomfort may occur with heavy physical activity or excessive stress on the spine.

- If the pain persists, a doctor should be consulted to check whether there is an underlying problem (e.g. implant problems or malunion).

Risk of long-term persistence of pain

- Chronic pain: In very rare cases, chronic pain may develop after surgery. This is usually due to

- o Inadequate nerve damage management.

- o Pseudarthrosis (malunion).

- o Problems with implants.

- In cases of long-term pain, a multidisciplinary approach (pain specialist, physiotherapist) may be required.

Suggestions to minimise pain

1. Use of Painkillers:

- o Painkillers recommended by the doctor should be used regularly.

2. Physical Activity:

- o Light walks and stretching exercises reduce muscle spasms.

3. Physiotherapy:

- o Postoperative physical therapy can help manage pain.

4. Correct Position:

- o Correct posture when lying or sitting relieves pain.

5. Supportive Equipment:

- o Postoperative corsets or pillows can be used.

Outcome

Pain after scoliosis surgery usually decreases significantly within 4-6 weeks and disappears completely within 3-6 months. The duration and intensity of pain may vary individually. If the pain lasts longer than

expected or continues to be severe, a doctor should be consulted to assess whether there is an underlying problem.

Gemini Advanced 1.5. Pro:

Pain after scoliosis surgery is a normal part of the healing process. However, the good news is that this pain is usually temporary and diminishes over time. Although the intensity and duration of pain varies from person to person, a general timeline is as follows:

First few days: Immediately after the operation, it is normal to feel pain at the incision site and in the back. This pain will be controlled with painkillers during your hospital stay.

First 4-6 weeks: The pain starts to decrease after the first few days, but may still be moderate. You may need to continue taking painkillers during this period. Also, the pain may increase as you move or change position.

6 weeks - 3 months: The pain gradually decreases and you become more mobile. Physiotherapy and exercises help to reduce pain and strengthen the muscles.

3-6 months: Most patients do not need significant pain relief during this period. However, you may feel pain when you get tired or do excessive activity.

6 months - 1 year: The pain usually disappears completely during this period. Your spine gets stronger and you can do your daily activities easily.

Factors affecting pain:

- Type and complexity of the operation: More extensive operations may cause more pain.
- The degree of curvature: Larger curvatures can cause more tissue damage and therefore more pain.
- Pain threshold: Everyone has a different pain threshold.
- Postoperative care: Following postoperative instructions helps to reduce pain.
- Psychological factors: Stress, anxiety and depression can increase pain.

Tips for managing pain:

- Take your painkillers regularly: Take the painkillers prescribed by your doctor regularly.
- Go to physiotherapy: Your physiotherapist will teach you specific exercises to reduce pain and increase mobility.
- Apply ice: For the first few days after surgery, you can apply ice to reduce swelling and pain.
- Rest: Give your body time to rest.
- Change your position: Avoid staying in the same position for a long time.

- Eat a healthy diet: Eating a healthy diet speeds up the healing process.
- Learn stress management techniques: Stress can increase pain. It may be helpful to learn stress management techniques such as relaxation techniques, meditation or yoga.

If your pain is severe or persists for a long time, do not hesitate to contact your doctor.

Microsoft Copilot:

The duration of pain after scoliosis surgery may vary from person to person, but in general it can be summarised as follows:

1. First Days: Pain is usually at its most intense during the first few days after surgery and is managed in hospital with intravenous painkillers
2. First Week: During the first week, pain gradually decreases, but patients may still need pain medication
3. First Months: Mild to moderate pain may persist for the first few months. During this period, physiotherapy and regular exercises can help manage the pain
4. 6-12 months: Full recovery usually takes between 6-12 months, during which time the pain will gradually decrease.

Each patient's recovery process may be different, so it is important to follow your doctor's recommendations and stay in contact with your doctor about pain management.

15. Can I do sports after scoliosis surgery?

ChatGPT 4o :

Yes, you can do sports after scoliosis surgery. However, the process of returning to sports varies depending on your recovery status, the extent of the surgery and which sports branch you are interested in. Postoperative sports activities should be started in a controlled manner and your doctor's recommendations should be taken into consideration.

When Can Sports Start?

1. First 6 Weeks: Rest and Light Movements

- During this period, the spine is in the process of healing and sports are not recommended.
- Low-impact activities such as light walking can be done.
- Heavy lifting and movements that put pressure on the spine should be avoided.

2. 6 Weeks - 3 Months: Light Exercises

- With the permission of your doctor, light exercises that increase flexibility and muscle strength can be started.

- Recommended activities:

- o Walking.

- o Low-paced swimming (especially backstroke).

- o Low-impact movements of yoga or pilates (limited intervals).

- Contact sports or intense physical exertion are not recommended during this period.

3. 3 - 6 months: Increased physical activity

- Activities such as light jogging and cycling can be done.

- Sports that do not increase the load on the spine are safe.

- However, high-impact sports are still limited.

4. 6 - 12 months: Transition to intensive sports activities

- In this period when the spinal fusion is largely completed, it is possible to return to many sports.

- With the approval of the doctor and physiotherapist, contact sports (e.g. football, basketball) or high-impact sports can be started.

5. 12 Months and After: All Sports

- Most patients can do sports during this period without any restrictions.

- However, caution should be exercised with sports that place excessive stress on the spine (e.g. lifting heavy barbells).

Which sports are safe?

The following sports are generally considered safe after surgery:

- Swimming: Minimal load on the spine and strengthens the muscles.

- Cycling: Safe when done with proper posture.

- Yoga and Pilates: Light and low-impact positions should be preferred.

- Walking and light jogging: Low-impact activities.

Sports to Avoid

The following sports are not recommended immediately after surgery and the return process should be planned with the approval of the surgeon:

- Contact Sports: Sports such as football, rugby, combat sports where sudden blows to the spine can be received.

- Heavy Lifting: Activities that overload the spine such as weight lifting or weightlifting.

- High Risk Sports: Sports with a high risk of falling, such as skateboarding, mountain biking or rock climbing.

Things to consider when returning to physical activity

1. Doctor's Approval: Always talk to your doctor before starting sports.
2. Rehabilitation: It is important that you have completed a physiotherapy programme.
3. Careful Start: Start at a slow pace and do not push your body to its limits.
4. Correct Equipment: Use appropriate equipment and posture techniques to support the spine.

Conclusion

It is possible to do sports after scoliosis surgery and regular physical activity is beneficial for spinal health. However, the return to sport should be gradual and planned according to your doctor's recommendations. Most patients can safely return to their favourite sports within 6-12 months.

Gemini Advanced 1.5. Pro:

Returning to sport after scoliosis surgery depends on how your recovery progresses and the type of sport you do. In general, it is important to return to sport gradually after surgery and to follow your doctor's recommendations.

Here is a general timeline and important points about returning to sports after scoliosis surgery:

First 3 Months:

- During this period, you should avoid heavy lifting, bending and twisting.
- You can start with light activities such as walking and gradually increase them.
- Low-impact sports such as swimming can be started after 3 months with your doctor's approval.

3-6 Months:

- Your pain will decrease and your mobility will increase.
- You can start medium-impact sports such as running and cycling.
- You should avoid team sports or sports that require contact.

6-12 Months:

- Most patients can return to many sports activities during this period.
- However, you should consult your doctor for high-impact sports or sports that require contact.
- It is important to get your doctor's approval before starting sports such as football, basketball and gymnastics.

12 Months and After:

- Most patients can do any sport they want in this period.
- However, you should continue to avoid activities that may strain your spine.
- Your doctor may impose restrictions on your sports activities and intensity.

Factors affecting return to sports:

- Type and complexity of the surgery: More extensive surgeries may prolong the return to sport.
- Your recovery process: Everyone's recovery process is different.
- The type of sport you play: High-impact sports or sports that require contact may require a longer recovery time.
- Your doctor's recommendations: Your doctor will give you specific recommendations.

Important points:

- Get your doctor's approval before starting sports.
- Increase your activity level gradually.
- Listen to your body and stop the activity if you feel pain.
- Do not neglect warm-up and cool-down exercises.
- Use appropriate sports equipment to support your spine.

Returning to sports after scoliosis surgery can help strengthen your spine, increase your flexibility and improve your overall health. However, it is important to be patient and follow your doctor's recommendations.

Microsoft Copilot:

Yes, you can do sports after scoliosis surgery, but it is important to be careful and follow your doctor's recommendations. The process of starting to do sports after surgery usually proceeds as follows:

1. First Months: Movements such as heavy lifting, bending and twisting should be avoided for the first few months after surgery. Low-impact exercises, such as walking, swimming and gentle yoga, are recommended during this period
2. 6-9 Months: Between 6-9 months after surgery, you can gradually return to more intense exercises and sports with the approval of your doctor.
3. Full recovery: Full recovery usually takes between 6-12 months. During this time, it is important to do regular exercises to maintain your spine health

Recommended sports and activities include swimming, gentle yoga, cycling and elliptical machine training.

Heavy weight lifting, high-impact sports and exercises that put too much stress on the spine should be avoided

16. How much does scoliosis surgery cost?

The cost of scoliosis surgery varies depending on many factors. In Turkey, the cost of this type of surgery varies between €3,200 and €25,000, depending on factors such as the complexity of the surgery, the techniques used, the location of the hospital and the experience of the surgeon.

Scoliosis surgeries in particular can be in higher price ranges due to the cost of implants and surgical equipment used. For example, some sources indicate that the cost of scoliosis surgery in Turkey starts around USD 15,000.

In addition, the size of the surgery and the length of hospital stay are also important factors affecting the cost. In some cases, scoliosis surgery costs can range between 10,000-15,000 Euros.

These costs can include surgical fees, hospital expenses, implant costs, rehabilitation expenses and additional medical services. However, in order to get a precise price, it is recommended that you contact a healthcare provider specialised in scoliosis surgery for a detailed assessment and quote.

Gemini Advanced 1.5. Pro:

The cost of scoliosis surgery can vary widely depending on many factors. These factors include the following:

- Country and city: The cost of healthcare varies from country to country and even from city to city.
- Hospital and surgeon: Private hospitals and renowned surgeons can often charge higher fees.
- Type and complexity of the surgery: The surgical technique used, the implants and the duration of the surgery affect the cost.
- Age and health status of the patient: For elderly patients or patients with additional health problems, surgery can be more complex and costly.
- Length of hospital stay: The length of hospital stay after surgery affects the total cost.
- Insurance coverage: The extent to which your health insurance covers the costs of surgery is an important factor.

Cost of scoliosis surgery in Turkey:

The cost of scoliosis surgery in Turkey can vary between 50,000 TL and 200,000 TL, depending on the factors mentioned above. These prices usually include hospital stay, surgeon's fee, anaesthesia, implants and postoperative follow-up.

Other factors affecting the cost:

- Preoperative investigations: Imaging modalities such as X-rays, MRI and blood tests may incur additional costs.
- Physiotherapy: Postoperative physiotherapy sessions may also increase the cost.
- Medications: You may have to pay additional fees for painkillers and other medications.
- Travelling and accommodation: If you are having surgery in a different city, you should also factor in travel and accommodation costs.

Recommendations:

- Get quotes from different hospitals: You can compare quotes from several different hospitals.
- Find out your insurance coverage: Find out how much your health insurance covers the costs of surgery.
- Ask for a detailed cost analysis: Ask the hospital for a detailed cost analysis including all costs of the surgery.
- Discuss payment options: Discuss payment options with the hospital and ask about instalment options.

Scoliosis surgery can be a costly procedure. However, it is an important investment in your health. It is important to carefully evaluate the costs before surgery and make a plan that fits your budget.

Microsoft Copilot:

The cost of scoliosis surgery varies depending on several factors. These factors include the location of the surgery, the surgeon's experience, the severity of the scoliosis, complications and length of hospital stay. In general, the cost of scoliosis surgery can range from US\$140,000 to US\$175,000

These costs may vary according to the complexity of the surgery and the needs of the patient. Pre- and post-operative care, physiotherapy and possible complications can also affect the total cost

17. What is the lifespan of the implants used during scoliosis surgery?

ChatGPT 4o :

The implants (screws, rods, hooks) used in scoliosis surgery are generally designed to last a lifetime. Most patients continue their lives with the implants used in surgery and do not need any additional intervention. However, in some cases, the implants may need to be replaced or removed.

Factors Affecting the Lifespan of Implants

1. Material of the implant

- Titanium: It is the most commonly used material in scoliosis surgery. It is preferred because it is light, durable and biocompatible. It is resistant to corrosion and has a long service life.

- Stainless Steel: Less commonly used, but durable. The risk of allergic reaction is slightly higher than with titanium.

2. Success of Fusion

- Successful fusion of the vertebrae during surgery allows the implants to complete their task of stabilising the spine.
- After a successful fusion, the load on the implants is reduced, which increases the life of the implant.

3. Physical activity and mechanical stress

- Intense physical activity, heavy lifting or high-impact sports can place mechanical stress on the implants.
- A good rehabilitation programme and a spine-protective lifestyle ensure the longevity of the implants.

4. Implant Problems

- In rare cases, loosening, fracture or displacement of the implants may occur. These situations usually require additional surgical intervention.

Is it necessary to remove implants?

- In most cases, implants remain in place for life and do not need to be removed.
- However, implants may need to be removed in the following cases:

1. Infection: Infection at the surgical site may require removal of the implants.
2. Implant Problems: Loosening of screws, breakage or displacement of rods.
3. Physical Discomfort: Some patients may experience discomfort if the implants are close to the skin surface.
4. Completion of Fusion: When the fusion is complete, in some cases the implants can be optionally removed (this is rarely done).

Current Data on the Durability of Implants

- Most implants are designed to last a lifetime and modern technologies have increased this durability.
- Except for rare complications (5-10%), the implants do not need to be replaced or removed.

Conclusion

The implants used in scoliosis surgery are designed to last throughout the patient's life. After the fusion is completed, implants usually do not require additional intervention. However, the condition of the implants should be monitored with regular doctor controls. Early intervention in case of a possible problem can prevent more serious complications.

Gemini Advanced 1.5. Pro:

Implants used in scoliosis surgery are designed to last a lifetime under ideal conditions. These implants are usually made of durable and body-compatible materials such as titanium or stainless steel.

However, in some cases, implants may need to be replaced early. Here are some factors that affect the lifespan of implants:

Material and Quality of the Implant:

- Titanium implants are more durable and more resistant to corrosion than stainless steel implants.
- The production quality of the implant is also important. Quality materials and workmanship prolong the life of the implant.

Patient's Age and Activity Level:

- In young and active patients, implants may be exposed to more stress, which can increase the risk of wear and tear.
- In adult patients, decreased bone density may cause the implants to loosen.

Type and Complexity of Surgery:

- Implants used in more complex surgeries may be subjected to more stress.
- The success of the fusion is also important. Incomplete fusion of the vertebrae may increase the load on the implants and shorten their life span.

Postoperative Complications:

- Infection can cause loosening or corrosion of the implants.
- Conditions such as implant fracture or dislocation may also require implant replacement.

How long do implants last?

Generally, implants used in scoliosis surgery last a lifetime. However, depending on the factors mentioned above, implants may need to be replaced after 10-20 years in some patients.

Situations where implants need to be replaced:

- Implant fracture or loosening
- Infection
- Pain or discomfort
- Failure of the implant to fulfil its function

Importance of Regular Check-ups:

Regular check-ups after scoliosis surgery are important to monitor the condition of the implants and to diagnose possible problems early. Imaging methods such as X-rays show whether the implants are in place and whether there are any problems.

If you have had scoliosis surgery and have any concerns about your implants, do not hesitate to contact your doctor.

Microsoft Copilot:

The lifespan of the implants used during scoliosis surgery is usually long-lasting and designed to last a lifetime. However, the lifespan of these implants can vary depending on various factors. These factors include the patient's age, general health, postoperative care and the site of implant placement

In general, implants can continue to function for many years, but in rare cases implants may need to be replaced. Regular medical check-ups and post-operative care are therefore important

18. What are the complication rates after scoliosis surgery?

ChatGPT 4o :

Although scoliosis surgeries are usually performed safely, like any surgical procedure, they carry some risk of complications. Complication rates depend on factors such as the type of scoliosis, degree of curvature, surgical method and general health status of the patient. In general, the complication rate in scoliosis surgery varies between 5-10%.

Common Complications

1. Infection:

- o Rate: 1-4%.

- o Superficial or deep infections may develop at the operation site.

- o Treatment: Managed with antibiotics or, in rare cases, removal of the implants.

2. Bleeding and Need for Blood Transfusion:

- o Rate: 1-5%.

- o There may be excessive bleeding during scoliosis surgery and blood transfusion may be required.

3. Nerve Damage:

- o Rate: 0.5-1%.

- o There may be damage to the spinal cord or nerve roots. This can cause numbness in the legs, loss of strength or, rarely, paralysis.

- o The use of neuromonitoring significantly reduces this risk.

4. Implant Problems:

- o Rate: 1-5%.
- o Loosening, breakage or displacement of the rods or screws may occur.
- o Treatment: Revision surgery may be required.

5. Pseudarthrosis (Inadequate Fusion):

- o Rate: 1-2%.
- o If the vertebrae do not fuse sufficiently, the curvature may progress or pain may occur.
- o Treatment: Additional surgical intervention may be required.

6. Pulmonary Complications:

- o Rate: less than 1%.
- o Temporary decrease in lung capacity may be seen especially in thoracic scoliosis surgeries.

7. Deep Vein Thrombosis (DVT) and Pulmonary Embolism:

- o Rate: 0.5 per cent.
- o Due to immobilisation after surgery, a clot may form in the legs and this clot may go to the lungs.
- o Treatment: Blood thinners and early mobilisation.

Rare Complications

1. Spinal Cord Injury:

- o A very rare but serious complication.
- o Although the risk of paralysis is low (0.1-0.2%), the use of neuromonitoring minimises this risk.

2. Revision of Previous Surgeries:

- o Rate: 10-20% (especially in complex scoliosis cases).
- o Re-intervention may be required due to a previous failed surgery or complications.

3. Donor or Graft Problems:

- o If bone graft is used, pain or infection may develop at the donor site.

Factors Affecting Complication Rates

1. Severity of scoliosis:

- o The risk of complications is higher with larger Cobb angle ($>70^\circ$) or complex deformities.

2. Age:

- o The complication rate is lower in young individuals.

- o Risks may increase in adults and elderly individuals (especially degenerative scoliosis).

3. Surgeon's Experience:

- o The complication rate is lower in procedures performed by an experienced surgeon.

4. Underlying Diseases:

- o Additional conditions such as diabetes, osteoporosis or neuromuscular diseases may increase the risk of complications.

Management of Complications

- Early Intervention: Complications can usually be successfully treated when detected early.

- Regular Follow-up: Regular postoperative check-ups minimise the risk of complications.

- Rehabilitation: Physiotherapy speeds up the healing process and helps prevent complications.

Conclusion

The complication rate in scoliosis surgery is generally low (5-10%). Modern surgical techniques, experienced surgeons and the use of technologies such as neuromonitoring minimise these risks. It is important to talk to your doctor about any risk of complications and to keep regular follow-ups.

Gemini Advanced 1.5. Pro:

Although scoliosis surgery is generally a safe procedure, as with any surgical procedure, it carries some risk of complications. The good news is that, thanks to modern surgical techniques and advanced implants, complication rates are considerably lower than in the past.

Complications that may occur after scoliosis surgery and their approximate rates are as follows:

Common Complications (1-10%):

- Pain: Postoperative pain is a common complication, but it is usually temporary and can be controlled with painkillers.

- Infection: The risk of wound infection is present as with any surgery. It is treated with antibiotics.

- Bleeding: Bleeding may occur during or after the operation. It can usually be controlled, but blood transfusion may rarely be required.

- Implant problems: Loosening, fracture or dislodgement of the implants may occur, although this is rare. In this case, revision surgery may be required.

Less Common Complications (0.1-1%):

- Nerve damage: There is a risk of nerve damage because the spinal nerves are worked close to the spinal nerves. This may cause numbness, weakness or loss of sensation in the legs. It is usually temporary, but can be permanent.
- Lung problems: Breathing problems such as pneumonia or fluid accumulation in the lungs may develop after surgery.
- Blood clots: Blood clots can form in the legs. These clots can go to the lungs and cause pulmonary embolism.

Rare Complications (less than 0.1%):

- Incomplete fusion of the spine: Failure of the vertebrae to fuse completely after surgery may cause pain and limitation of movement. Revision surgery may be required.
- Adjacent segment disease: Wear and tear may occur over time in the vertebrae above or below the fusion area.
- Cerebrospinal fluid leakage: Cerebrospinal fluid may leak through the spinal membrane.
- Heart problems: In rare cases, heart problems may develop during or after surgery.

Factors affecting the risk of complications:

- Age and general health of the patient: Elderly patients or patients with additional health problems have a higher risk of complications.
- The degree of curvature and complexity of the surgery: Larger curvatures and complex surgeries increase the risk of complications.
- Surgeon's experience: An experienced surgeon reduces the risk of complications.
- Postoperative care: Careful care and rehabilitation after surgery reduces the risk of complications.

Scoliosis surgery is generally a safe procedure and most patients achieve successful results. However, as with any surgical procedure, there are risks of complications. Discussing the risks and benefits in detail with your doctor before surgery will help you set realistic expectations about the surgery and make an informed decision.

Microsoft Copilot:

Complication rates after scoliosis surgery may vary depending on the type of scoliosis and the general health of the patient. In general, complication rates are as follows:

- Idiopathic scoliosis: Complication rate varies between 5.6% and 7.6
- Congenital scoliosis: Complication rate can range from 10.1 to 89 per cent
- Neuromuscular scoliosis: Complication rate between 2 and 3 per cent

These complications can include infection, bleeding, implant problems and, in rare cases, neurological damage. Careful preoperative and postoperative assessment and care play an important role in reducing these risks

19. What happens if scoliosis is not treated?

ChatGPT 4o :

Untreated scoliosis can progress over time and lead to serious health problems, depending on the severity of the curve, the type of scoliosis and the age of the patient. While some cases of mild scoliosis do not require treatment, untreated progressive or symptomatic scoliosis can lead to significant complications.

Possible consequences of untreated scoliosis

1. Progression of Curvature

- In adolescents: Curvature may progress rapidly in growing children. Especially if the Cobb angle is over 30°, the risk of progression is higher.
- Adults: After growth is complete, the rate of progression of scoliosis slows down, but may continue to progress if the Cobb angle is above 50°.

2. Pain and limitation of movement

- Over time, the curvature of the spine can lead to muscle imbalance, posture problems and back/lumbar pain.
- Daily activities may be restricted in severe scoliosis.

3. Cardiopulmonary Problems

- In severe curvatures affecting the thoracic region (thoracic scoliosis):
 - o Reduced lung capacity.
 - o Breathing difficulties.
 - o Impairment of heart function.
- These risks increase especially if the Cobb angle is 70° and above.

4. Physical deformity and appearance problems

- Marked asymmetry between the shoulders, hips and rib cage may develop.
- Posture problems and changes in appearance can lead to loss of self-confidence and psychosocial problems, especially in young people.

5. Spinal Degeneration

- Untreated scoliosis causes uneven pressure on the vertebrae and discs. This can lead to

- o Spinal arthritis (spondylosis) at an early age.

- o Herniated discs.

- o May lead to degenerative changes.

6. Nerve compression

- Progressive scoliosis can cause pressure on the spinal nerves. This can cause

- o Numbness in the legs.

- o Weakness.

- o In rare cases, it may lead to bowel or bladder control problems.

7. Decreased Quality of Life

- When scoliosis is left untreated, quality of life can be significantly reduced due to pain, physical deformities and restricted mobility.

- Especially severe scoliosis can negatively affect the person's daily life activities and work performance.

Which Scoliosis Types Require Treatment?

- Cobb Angle of 40° and above: There is a high risk of progression if left untreated.

- Symptomatic Scoliosis: Treatment is necessary in patients with pain, shortness of breath or limitation of movement.

- Neuromuscular Scoliosis: Early treatment is important as it can progress rapidly.

- Congenital Scoliosis: Congenital spinal anomalies can cause progressive curvatures.

Untreated Mild Scoliosis

In mild cases of scoliosis (Cobb angle below 20°):

- Treatment may not be necessary.

- However, regular follow-up (every 6-12 months) is recommended. If the curvature progresses, the treatment plan is re-evaluated.

Conclusion

Untreated scoliosis can lead to serious health problems, especially in severe cases. Depending on the type and severity of the curvature, untreated scoliosis can lead to spinal degeneration, cardiopulmonary problems, nerve compression and a significant decrease in quality of life. Early diagnosis and regular follow-up are critical to control the effects of scoliosis.

Gemini Advanced 1.5. Pro:

Scoliosis is a condition that can progress rapidly, especially during adolescence. Untreated scoliosis can lead to serious health problems and a decrease in quality of life over time.

Here are the possible consequences of untreated scoliosis:

Physical Health Problems:

- Progression of spinal deformity: The curvature can increase over time, which can lead to marked changes in appearance, hunchback and imbalance of the body.
- Back pain: Scoliosis can cause pain in the back, neck and lower back. This pain can limit daily activities and reduce quality of life.
- Breathing problems: Severe scoliosis can compress the rib cage, preventing the lungs from fully expanding. This can lead to shortness of breath, respiratory failure and even heart problems.
- Heart problems: The pressure on the lungs can cause the heart to work harder and eventually lead to heart failure.
- Nerve problems: Curvature of the spine can put pressure on the spinal cord and nerves, causing numbness, tingling, weakness and even paralysis.
- Digestive problems: Curvature of the spine can put pressure on the digestive system, causing constipation, indigestion and other digestive problems.
- Psychological effects: Changes in appearance can lead to lack of self-confidence, social isolation and depression.

Decreased Quality of Life:

- Restriction in physical activities: Scoliosis can make it difficult to play sports, exercise and perform other physical activities.
- Occupational limitations: In some professions, physical difficulties may be experienced and work performance may decrease due to scoliosis.
- Difficulty in social interactions: Changes in appearance can cause a lack of self-confidence and shyness in social interactions.
- Clothing problems: Changes in body shape can make it difficult to find appropriate clothing.

Severity of Untreated Scoliosis:

The severity of scoliosis depends on the degree of curvature and the age of the person. While small curvatures usually do not cause serious problems, large curvatures can progress over time and cause the health problems mentioned above.

Importance of Early Diagnosis and Treatment:

Early diagnosis and treatment of scoliosis is very important to prevent complications and maintain quality of life. Regular health checks and scoliosis screenings can help ensure early diagnosis.

If you or your child has symptoms of scoliosis, it is important to consult a doctor and get the necessary treatment. Remember, scoliosis is a treatable condition and early intervention can prevent serious health problems.

Microsoft Copilot:

If scoliosis is not treated, various complications can occur. These complications are as follows:

1. **Spinal Deformity:** Untreated scoliosis can cause the curvature of the spine to progress and the shoulders, hips and ribs to become unstable. This can lead to physical problems such as back pain and restricted movement
2. **Respiratory Problems:** In severe cases of scoliosis, the curvature of the spine can compress the chest cavity, preventing the lungs from fully expanding. This can cause shortness of breath, fatigue and other respiratory symptoms
3. **Heart problems:** Curvature of the spine can compress the chest cavity and put pressure on the heart and large blood vessels. This can reduce blood flow, leading to heart palpitations, chest pain and other cardiovascular symptoms
4. **Pain and Discomfort:** Untreated scoliosis can cause increasing pain and discomfort over time
5. **Psychological effects:** The visible deformity and physical limitations of scoliosis can lower self-esteem and lead to social isolation. This can lead to psychological problems such as anxiety and depression

These potential risks of untreated scoliosis can be reduced with appropriate treatment and care. If you are experiencing symptoms of scoliosis, it is important to consult a doctor to discuss treatment options.

20. Does my spine completely recover after scoliosis surgery?

ChatGPT 4o :

Scoliosis surgery is an effective method to correct the curvature of the spine and provide stability. However, the concept of 'full recovery' after spine surgery should be considered in terms of the structural condition and functional capacity of the spine. Although the spine is completely corrected and stabilised after surgery, some restrictions may remain.

Results of the surgery

1. Curvature Correction

- In most scoliosis surgeries, the curvature of the spine is corrected by 50-80%.

- Objective: The aim is to stabilise the spine and stop the progression of the curvature, rather than to completely eliminate it.

2. Fused Spine

- During the operation, the vertebrae are fixed by fusion (fusion). This results in loss of mobility in certain areas of the spine.
- The result: Even if the spine is completely recovered, movement is limited in the areas of fusion.

3. Appearance and posture

- There is a marked improvement in physical appearance and posture.
- The alignment of the shoulders and hips usually improves after surgery.

4. Reduction of Pain

- A significant reduction in back and lower back pain is expected after surgery.
- However, some patients may experience a slight feeling of discomfort after surgery.

Postoperative Restrictions

- The spine is stabilised and the curvature is controlled, but there is a loss of flexibility in the areas of fusion.
- Mobility: Non-fusion areas provide normal mobility, but a completely natural spinal mobility should not be expected.
- High impact sports: Heavy sports and physical activities should be avoided until your surgeon gives permission.

Physical Activity and Return

- Most patients can return to their normal daily activities within 6-12 months after surgery.
- Sports and heavy physical work can be done with the approval of the surgeon.

Complications or Long-Term Problems

- Insufficient fusion (pseudarthrosis): In rare cases, the vertebrae may not fuse completely, which can affect stability.
- Neighbouring Segment Disease: The vertebrae above or below the fusion areas may be subjected to more pressure, which may lead to degeneration over time.

Success rate and permanent recovery

- Scoliosis surgery offers successful results for most patients. The spine stabilises, curve progression stops and quality of life improves significantly.

- Even if you don't feel as if your spine has completely recovered, your daily life is largely normalised thanks to pain control, posture improvement and an increase in functional capacity.

Conclusion

The spine is not completely healed after scoliosis surgery, because some limitations in mobility occur due to fusion. However, surgery corrects the curvature, stops progression and improves quality of life. The recovery process and long-term results depend on following your surgeon's recommendations and regular follow-up.

Gemini Advanced 1.5. Pro:

After scoliosis surgery, your spine is not expected to heal completely and return to its preoperative condition. The aim of the operation is to straighten the spine and stop the progression of the curvature. In the process, parts of the spine are permanently fused together, which causes some reduction in the flexibility of the spine.

However, for most patients this does not significantly affect their daily life. After the surgery, most patients get rid of their pain, their posture improves and they can lead a more active life.

Here are the changes you can expect in your spine after scoliosis surgery:

- Decreased flexibility: The flexibility of your spine decreases in the fusion area. This means that you may experience limitations when performing some movements. However, you can usually do your daily activities easily.
- Improved posture: The surgery corrects the curvature of your spine and improves your posture. This results in a more balanced appearance and better body mechanics.
- Reduction in pain: The surgery significantly reduces or completely eliminates the pain you experience due to scoliosis.
- Increase in strength: With postoperative physiotherapy and exercises, you can strengthen the muscles around the spine and make your spine more stable.

Spinal recovery:

- After the surgery, it may take 6 months to 1 year for your spine to fully heal and the bones to fuse.
- During this time, it is important to follow your doctor's instructions, go to physiotherapy and adopt a healthy lifestyle.

Conclusion

Although scoliosis surgery does not completely restore your spine, it corrects the curvature, reduces your pain, improves your posture and allows you to lead a more active life. There may be some reduction

in the flexibility of your spine after surgery, but for most patients this does not significantly affect their daily lives.

It is important to discuss your expectations and possible outcomes in detail with your doctor before surgery.

Microsoft Copilot:

Your spine may not be completely straightened after scoliosis surgery, but surgery usually significantly corrects the curvature of the spine and stops further progression. The aim of the surgery is to straighten and stabilise the spine as much as possible

Postoperative recovery takes time for the spine to fuse and stabilise. This process usually takes between 6-12 months. Physiotherapy and regular exercises are important to maintain the health of the spine and support the healing process.

21. What preparations should I make before scoliosis surgery?

ChatGPT 4o :

A good preparation before scoliosis surgery ensures that the surgical process goes more smoothly and accelerates the healing process. Preparations should be both physical and psychological.

1. Medical Preparation Before Surgery

a. Doctor's consultations and examinations

- Blood tests: This is done to detect anaemia, infection or other health problems before surgery.
- X-ray, MRI or CT: This is necessary for detailed visualisation of the spine and for surgical planning.
- Neurological examination: Evaluation of nerve function.
- General health assessment: Evaluation by cardiology, anaesthesia and other relevant specialities may be requested.

b. Reporting the medication you are taking

- Your regular medications (e.g. blood thinners) should be reported to your doctor before surgery.
- Some medications can be stopped before surgery (for example, blood thinners such as aspirin).

c. Smoking and Alcohol Consumption

- Smoking: It should be quit 6 weeks before the operation. Smoking adversely affects the spinal fusion process.
- Alcohol: It should be stopped a few days before surgery.

2. Physical Preparation

a. General Health Improvement

- Prepare the body for surgery with a balanced diet.
- Your preoperative weight should be within healthy limits.
- Strengthen your muscles with light exercises (with the doctor's approval).

b. Preoperative Hygiene

- Shower before surgery to protect the surgical site from infection. In some cases you may be asked to use antiseptic soap.

c. Equipment Preparation

- Provide equipment you may need at home after surgery:

- o Supportive pillows.
- o Raised chairs.
- o Wheeled walker or crutches (if necessary).

3. Psychological Preparation

a. Learn about the Surgical Process and Results

- Ask your surgeon about how the operation will be performed, the risks and the healing process.
- The better informed you are, the less anxious you will be and the more prepared you will be for the operation.

b. Create a Support System

- Ask your family or friends for help after the operation.
- If necessary, see a counsellor for emotional support.

4. Preoperative Day

a. Preoperative Fasting

- On the day of surgery, eating and drinking should usually be stopped 8 hours before surgery (necessary for anaesthesia).

b. Preparation of the operation bag

- Take the following items with you:
 - o Comfortable clothes.
 - o Personal hygiene products.
 - o Books, telephone or other relaxing activities.

c. Follow the doctor's instructions

- Follow all pre-operative instructions given by your surgeon and anaesthetist.

5. Emotional preparation before surgery

- A positive state of mind accelerates healing.
- Share your concerns with your surgeon and clarify your questions.
- You can use relaxing techniques such as meditation or breathing exercises.

Conclusion

Good physical, medical and psychological preparation before scoliosis surgery helps to make the surgical process and recovery more successful. It is important to follow all instructions and get your support system ready. By planning your preparations according to your surgeon's instructions, you can approach the surgery with confidence.

Gemini Advanced 1.5. Pro:

Since scoliosis surgery is a major surgical procedure, proper preparation before surgery will facilitate your recovery process and reduce the risk of complications. Here are the preparations you should make before scoliosis surgery:

1. Have a detailed discussion with your doctor:

- Discuss the risks, benefits and alternative treatment options of the surgery with your doctor in detail.
- Ask all your questions about the surgery and clarify your expectations.
- Get information about the tests and preparations you need to do before surgery.

2. Evaluate Your General Health Status:

- Take steps to improve your general health status before surgery.
- Stop smoking, reduce alcohol consumption and eat a healthy diet.
- If you have chronic diseases (diabetes, asthma, etc.), make sure they are under control with your doctor.
- Get the necessary vaccinations.

3. Review Your Medications:

- Inform your doctor about all medications (prescription and non-prescription) you are taking.
- Some medications should be discontinued or their doses adjusted before surgery.
- Blood thinners (such as aspirin) are usually stopped some time before surgery.

4. Have Preoperative Tests:

- Have blood tests, urine tests, lung function tests and imaging methods (such as X-ray, MRI) ordered by your doctor.

- ECG may be taken to evaluate your heart function.

5. Make Physical Preparation:

- Being physically prepared before surgery speeds up your recovery process.

- Do the exercises recommended by your doctor and do light activities such as walking.

- Learn breathing exercises.

6. Make Preparations at Home:

- Make arrangements to make you comfortable at home after surgery.

- Adjust your bed and sitting area.

- Provide necessary medical supplies (wound care materials, painkillers, etc.).

- Make sure you have a relative with you to help you.

7. Follow Preoperative Instructions:

- The night before surgery, you may not be allowed to eat or drink water after a certain time.

- Take a shower and remove your jewellery on the morning of the operation.

- Wear comfortable clothes to the hospital.

8. Make Psychological Preparation:

- It is normal to experience stress and anxiety before surgery.

- Try to manage your stress with relaxation techniques, meditation or yoga.

- Get support by talking to your family and friends.

Making these preparations before scoliosis surgery will help the surgery and recovery process to be more comfortable. Remember, your doctor and healthcare team will guide you before and after the surgery and answer all your questions.

Microsoft Copilot:

The following are the preparations that should be made before scoliosis surgery:

1. Consultation with the doctor: Your spine surgeon and his team will guide you through the pre-operative process. You may need medical approval for the surgery

2. Necessary tests: Preoperative tests include x-rays, blood tests and, if necessary, an MRI. These tests help your surgeon plan the surgery

3. Smoking and Alcohol: If you smoke, it is important to stop smoking for a few weeks before surgery. Smoking can negatively affect the healing process
4. Blood Donation: In some cases, a blood transfusion may be required during surgery. You can donate your own blood or ask your family members to donate blood
5. Home Preparations: Prepare your home for a comfortable recovery after surgery. Make your bedroom and bathroom easily accessible
6. Support System: Contact family members or friends who will help you in the postoperative period

22. Are there different surgical approaches for scoliosis surgery? Which technique is better?

ChatGPT 4o :

Yes, there are different surgical approaches for scoliosis surgery. Which method to choose depends on factors such as the type of scoliosis, the degree of curvature, the age and general health of the patient. Each approach has advantages and disadvantages; therefore, 'which technique is better' depends on the individual patient's situation.

1. Surgical Approaches

a. Posterior Approach (from the back)

- How is it done?

- o The spine is accessed from the back.
- o The spine is stabilised using screws, rods and hooks.
- o Fusion is usually performed in this approach.

- Area of Use:

- o It is the most commonly used method.
- o Suitable for most types of scoliosis (especially adolescent idiopathic scoliosis).

- Advantages:

- o High success rate in correction of curvature.
- o Provides a wide access along the entire spine.

- Disadvantages:

- o A longer surgical period and recovery period.

b. Anterior Approach (from the front)

- How is it done?

- o An incision is made in the chest or abdomen and the spine is accessed from the front.

- o Screws and rods are inserted to correct the curvature.

- Area of Use:

- o Cases of thoracic or lumbar scoliosis requiring intervention in fewer vertebral segments.

- Advantages:

- o Stabilises fewer vertebral segments and preserves more mobility.

- o Preferred in smaller curvatures.

- Disadvantages:

- o The risk of complications may increase due to working close to the thorax and abdominal organs.

c. Minimally Invasive Techniques

- How is it done?

- o The spine is accessed through small incisions and endoscopic surgical devices are used.

- o Rods and screws are inserted.

- Area of Use:

- o In mild cases of scoliosis or low-level curvatures.

- Advantages:

- o Smaller surgical scars.

- o Less pain and faster recovery.

- Disadvantages:

- o Not applicable for all types of scoliosis.

- o May not be sufficient for more complex curves.

d. Vertebral Body Tethering (VBT)

- How is it done?

- o A cable is inserted to correct the curvature of the spine.

- o No fusion is performed, which preserves spinal mobility.

- Area of Use:

- o Children and adolescents with growth potential.

- Advantages:

- o Preserves spinal mobility.

- o Less invasive.

- Disadvantages:

- o Not suitable for all patients.

- o Long-term results are not yet fully known.

e. Growth Friendly Techniques (Growing Rods)

- How is it done?

- o The rods are inserted into the spine and adjusted periodically during growth.

- o With magnetically controlled rods (MAGEC), adjustment can be made without surgical intervention.

- Area of Use:

- o In growing children.

- Advantages:

- o Controls curvature during growth.

- Disadvantages:

- o Repeated adjustments may be required.

2. Which technique is better?

- Posterior Approach: It is the preferred method in most cases and has a high success rate.

- Anterior Approach: It is suitable for smaller curvatures and to preserve mobility.

- Minimally Invasive Techniques: It may be preferred in milder curvatures.

- VBT and Growing Rods: Ideal for preserving growth potential in children.

The best technique is determined by the surgeon, taking into account the patient's scoliosis type, age and general health status.

Conclusion

The different approaches used in scoliosis surgery are customised according to the needs of the patient. Each approach has advantages and limitations. Your surgeon will recommend the most appropriate method for you after a detailed evaluation. Open communication between the patient and the surgeon during the treatment process is critical for achieving the best results.

Gemini Advanced 1.5. Pro:

Yes, different surgical approaches can be used in scoliosis surgeries. Which approach is 'better' depends on the patient's condition, the characteristics of the curve and the surgeon's preference.

Here are the main surgical approaches used in scoliosis surgeries:

1. Posterior Approach:

- It is the most commonly used approach.
- The incision is made on the back and the spine is accessed from behind.
- Advantages
 - o Provides access to most of the spine.
 - o Provides a large area for fusion.
 - o Neuromonitoring is easier.
- Disadvantages:
 - o May not provide adequate correction in some types of curvature (especially thoracic lordosis).
 - o The risk of muscle damage may be higher.

2. Anterior Approach:

- The incision is made in the chest or abdomen and the spine is accessed from the front.
- Advantages
 - o It is more effective in correcting thoracic lordosis.
 - o May cause less blood loss.
 - o Fusion rates may be higher.
- Disadvantages:
 - o Provides access to only certain areas of the spine.
 - o Risk of pulmonary and cardiac complications may be higher.
 - o Neuromonitoring is more difficult.

3. Lateral Approach:

- The incision is made on the side and the spine is accessed from the side.
- Advantages:
 - o It is a minimally invasive technique.
 - o It may cause less muscle damage.

- o The healing process may be faster.

- Disadvantages:

- o Provides access to only certain areas of the spine.

- o May be limited in correction of curvature.

4. Combination Approach:

- Both posterior and anterior approaches can be used together.

- Advantages:

- o Combines the advantages of both approaches.

- o Provides better correction in more complex curves.

- Disadvantages:

- o Operative time is longer.

- o The risk of complications may be higher.

Which Approach is Better?

Which surgical approach is more appropriate is decided according to the individual patient's condition. Your doctor will determine the most appropriate approach for you by evaluating the degree and location of the curvature, the type of scoliosis, the patient's age, general health and other factors.

It is important to choose an experienced scoliosis surgeon and discuss all options in detail before surgery.

Microsoft Copilot:

Yes, there are different surgical approaches for scoliosis surgery. Here are some common techniques:

1. Posterior Spinal Fusion: This operation, performed from the back of the spine, is the most common type of scoliosis surgery. The vertebrae are joined together using metal rods, screws and bone graft

2. Anterior Spinal Fusion: This surgery, performed from the front of the spine, is used especially for curvatures of the lower spine. This technique can preserve more mobility of the spine

3. Vertebral Body Tethering (VBT): Screws are inserted into the vertebrae and connected by a cable. The tension on the cable straightens the spine and the spine straightens further as growth continues

4. Growing Rod Operation: In order not to damage the growth tissues of the spine, a spine- or rib-based system is used. Rods are attached with screws or hooks to the spine or ribs above and below the curvature

Which technique is better? This depends on the patient's condition, the severity of the scoliosis and the experience of the surgeon. Posterior spinal fusion is one of the most common and reliable methods, but newer techniques such as vertebral body tethering may offer the advantage of preserving the mobility

of the spine. As each patient's case is different, it is important to have a detailed assessment with your doctor to determine the most appropriate surgical method.

23. How long will I stay in hospital after scoliosis surgery?

ChatGPT 4o :

The hospital stay after scoliosis surgery usually ranges from 3 to 7 days. This period may vary depending on the surgical method, the general health status of the patient, the complexity of the operation and the speed of recovery.

Factors Affecting Length of Hospital Stay

1. Type of Surgery

- Posterior Approach (from the back): Since it is usually a longer surgery, the hospital stay may be 5-7 days.
- Minimally Invasive Techniques or VBT: In less invasive methods, the hospital stay is shorter, usually between 2-4 days.

2. Recovery Speed

- As pain management and the ability to walk and move independently improve, the hospital discharge time may be accelerated.

3. Complexity of the Surgery

- In cases where larger curvatures are corrected or more than one vertebral segment is intervened, the length of stay may be prolonged.

4. Age and general health

- Young and healthy individuals usually recover faster.
- This period may be prolonged in the elderly or in individuals with underlying health problems.

5. Complications

- If complications (e.g. infection, excessive bleeding) develop during or after the operation, the hospital stay may be prolonged.

What happens during hospitalisation?

1. First day (day of surgery)

- The patient is admitted to intensive care or postoperative care unit.
- Pain management is provided and vital signs (heart rate, blood pressure) are closely monitored.

2. Day 1-2

- The patient is encouraged to sit up and start short walks.
- The physiotherapy team starts light exercises and mobilisation.

3. 3-5th day

- Pain management switches to oral medications.
- If the patient can walk independently, discharge is planned.

4. Before Discharge

- Stitches or dressings are checked.
- Information is given about home care and physiotherapy after discharge.

Suggestions to reduce hospital discharge time

- Rapid mobilisation can be achieved after surgery by following the instructions of the doctor and physiotherapist.
- You can shorten the recovery time by improving your general state of health before the operation.

Conclusion

Most patients are discharged within 3 to 7 days after scoliosis surgery. This period may be shorter in less invasive surgeries. Post-discharge recovery continues at home and is supported by physiotherapy programmes. Your surgeon will determine your hospital stay according to your postoperative needs.

Gemini Advanced 1.5. Pro:

The length of your hospital stay after scoliosis surgery varies depending on the type and complexity of the surgery, your general state of health and how your recovery progresses.

Usually, patients stay in hospital for 3 to 7 days after scoliosis surgery. However, in some cases, this period may be shorter or longer.

Here are some factors that may affect your hospital stay:

- Type of surgery: You may stay in hospital for a shorter period of time after surgeries performed with minimally invasive techniques. More complex surgeries may require a longer hospital stay.
- Postoperative complications: If complications such as infection, bleeding or nerve damage develop, your hospital stay may be longer.
- Pain control: You can be discharged when your pain is under control and you can move independently.
- Your general state of health: If you have other health problems or your recovery is slow, you may need to stay longer in hospital.

What happens during hospitalisation?

- After the operation, you will stay in the intensive care unit until you wake up.
- You will then be transferred to the ward.
- You will be checked regularly by nurses and doctors.
- Painkillers and other medicines are given.
- Wound care is provided.
- You will start movement and breathing exercises with a physiotherapist.
- You will be supported in walking and daily activities.

Discharge:

- You will be discharged when your doctor decides that you have recovered sufficiently and can safely provide care at home.
- Before you are discharged, you will be given information about what you need to do at home, your medication, appointments and things to look out for.

You can contact your doctor for more detailed information about your hospital stay after scoliosis surgery.

Microsoft Copilot:

The length of hospital stay after scoliosis surgery varies depending on the complexity of the surgery and the patient's general state of health. In general, patients stay in hospital between 4 and 7 days after surgery

24. How common is infection after scoliosis surgery?

ChatGPT 4o :

Infection after scoliosis surgery is rare thanks to modern surgical techniques and sterilisation procedures. The infection rate usually varies between 1-4%. However, the risk of infection depends on factors such as the patient's health status, the complexity of the surgical procedure and postoperative care.

Types and Frequency of Infection

1. Superficial Infections

- Ratio: Majority of all infections.
- Symptoms: Redness, swelling, increased temperature and mild pain around the surgical wound.
- It is usually treated with antibiotics and rarely requires additional surgery.

2. Deep Infections

- Rate: 0.5-2 per cent.

- Symptoms: More serious symptoms, such as high fever, intense pain, drainage or infection around the implant.
- Treatment usually requires surgical intervention (removal of infected tissue) and long-term antibiotic use.

Risk Factors

1. Surgical Factors:

- o Long surgical time.
- o Complex curve corrections.
- o Implant placement.

2. Patient Related Factors:

- o Diabetes.
- o Obesity.
- o Smoking.
- o Weak immune system (e.g. steroid use, HIV).
- o Pre-existing infections.

3. Post-Surgical Care:

- o Inadequate wound care.
- o Late recognition of postoperative complications.

Symptoms.

Symptoms of infection usually appear in the first few weeks after the operation, but can rarely develop months or years later. Common symptoms:

- Redness, swelling and pain around the wound.
- Discharge of fluid or pus from the wound site.
- Fever or chills.
- Increased pain during movement.

Precautions to minimise the risk of infection

- Pre-Surgical Preparation:

- o Optimisation of the patient's general health status (e.g. diabetes control, smoking cessation).
- o Antiseptic surgical preparation procedures.

- Antibiotic Use:

- o Preventive administration of antibiotics during and after surgery.

- Surgical Technique:

- o Ensuring a sterile environment.

- o Keeping the surgical time as short as possible.

- Postoperative Care:

- o Regular control of the wound area and ensuring hygiene.

- o Early recognition of signs of infection.

Treatment

- Superficial infections: Treated with antibiotics.

- Deep infections: Surgical intervention, removal or replacement of implants and long-term use of antibiotics may be required.

Conclusion

Infection after scoliosis surgery is a rare complication and in most cases can be successfully managed with appropriate treatment. Although the risk of infection is generally low, preoperative preparation and aftercare are critical to minimise this risk. If signs of infection are noticed, you should contact your surgeon immediately.

Gemini Advanced 1.5. Pro:

Infection after scoliosis surgery is a rare but serious complication. Thanks to modern surgical techniques, sterile conditions and antibiotic use, infection rates are very low.

In general, the incidence of infection after scoliosis surgery is between 1-3%. That is, 1 to 3 out of 100 patients may develop infection.

Factors that increase the risk of infection:

- Diabetes: The risk of infection is higher in diabetic patients.

- Obesity: Obesity can increase the risk of infection by negatively affecting wound healing.

- Smoking: Smoking impairs tissue healing and increases the risk of infection.

- Weak immune system: People with a weak immune system have a higher risk of infection.

- Duration of the surgery: Longer surgeries can increase the risk of infection.

- Postoperative care: Failure to follow postoperative wound care instructions increases the risk of infection.

Signs of infection:

- Redness, swelling, pain and temperature increase at the incision site
- Fire.
- Trembling
- Inflammation from the wound site
- Weakness and fatigue

Treatment of infection:

- Antibiotics
- Wound drainage
- Rarely surgical intervention

To prevent infection:

- Follow your doctor's instructions before and after surgery.
- Pay attention to wound care instructions.
- Do not smoke.
- Eat a healthy diet and drink plenty of water.
- Strengthen your immune system.

Although infection after scoliosis surgery is rare, it is a serious complication. If you notice signs of infection, contact your doctor immediately. Early diagnosis and treatment will help prevent the spread of infection and speed up your recovery.

Microsoft Copilot:

The risk of infection after scoliosis surgery is usually low, but it is still considered an important complication. Infection rates may vary depending on various factors. In general, the infection rate after scoliosis surgery ranges between 1% and 4

To reduce the risk of infection, surgeons use sterile techniques and patients are treated with antibiotics in the postoperative period. In addition, it is important for patients to pay attention to postoperative wound care and follow their doctor's recommendations to reduce the risk of infection.

25. How much spinal mobility is preserved after scoliosis surgery?

ChatGPT 4o :

Spinal mobility after scoliosis surgery varies depending on the number and location of the spinal segments fused during the surgical procedure. The fusion process limits mobility in certain areas of the spine, but non-fused segments largely retain mobility.

Factors Affecting Mobility

1. Number of Spine Segments Fused

- Fewer segments: If only the area of curvature is treated, more movement is preserved.
- More segments: If a large part of the spine is included in the fusion, mobility is more limited.

2. Placement of the fusion

- Thoracic region (thoracic vertebrae):

- o It is already naturally less mobile. Fusion usually does not affect daily activities too much.

- Lumbar Region (Lumbar Vertebrae):

- o It is a more mobile region. Fusion in this region may limit forward bending, twisting and rotational movements.

3. Surgical Technique

- Modern surgical techniques aim to preserve mobility. For example
 - o Minimally invasive methods.
 - o Non-fusion techniques such as Vertebral Body Tethering (VBT).

4. Age and Flexibility of the Patient

- Younger patients may retain their flexibility better after surgery.
- In elderly patients, mobility may be more limited due to natural degeneration.

Which Movements are Affected?

1. Bending Forwards and Backwards (Flexion and Extension):

- o If fusion is performed in the lumbar region, these movements may be limited.

2. Bending Sideways:

- o Depending on the extent of the fusion, this movement may also be partially affected.

3. Rotational Movement (Rotation):

- o Rotational movements may be restricted if fusion is performed in the thoracic and lumbar region.

Preservation of Mobility

- Fusion is usually focussed on the most immobile areas of the spine.

- The non-fused segments retain some of the spinal mobility.
- Postoperative physiotherapy and rehabilitation helps to increase flexibility and strengthen muscles.

Daily Life After Surgery

- Most patients can resume their daily activities after surgery.
- Light sports (swimming, cycling) and activities are usually possible.
- High-impact sports or activities requiring extreme mobility may be limited.

Conclusion

Spinal mobility is not completely lost after scoliosis surgery, but there is a partial loss of motion in the areas where fusion is performed. Non-fused segments and other areas retain mobility to a large extent. During surgical planning, your surgeon will determine an optimal strategy to preserve your mobility. The rehabilitation process supports mobility by increasing spinal flexibility and muscle strength.

Gemini Advanced 1.5. Pro:

The amount of spinal mobility preserved after scoliosis surgery depends on many factors. These include the type of surgery, the part of the spine fused, the length of the fusion, the degree of curvature and the surgical technique.

In general, scoliosis surgery reduces the flexibility of the spine somewhat. This is because the vertebrae are fused together during surgery and mobility is restricted. However, thanks to modern surgical techniques and implants, a large part of the spinal mobility can be preserved.

Here are the factors that influence spinal mobility:

- Length of fusion: The longer the section of the spine that is fused, the less mobility there is.
- Location of the fusion: Fusions in the neck and lower back affect mobility more than fusions in the back.
- Degree of curvature: Larger curvatures may require more vertebrae to be fused, which may reduce mobility.
- Surgical technique: Minimally invasive techniques and mobility-preserving surgical methods may preserve more spinal mobility.

How much is mobility reduced?

The reduction in spinal mobility after scoliosis surgery varies from person to person. Some patients may experience a slight restriction in mobility after surgery, while others may experience a more significant decrease.

Generally, a loss of mobility between 20-40% is expected. However, this rate may vary depending on the factors mentioned above.

What can be done to maintain mobility?

- Pre-operative assessment: Your doctor will assess your spinal mobility before surgery and determine the most appropriate surgical approach for you.
- Surgical techniques that preserve mobility: Some surgical techniques aim to preserve more spinal mobility.
- Postoperative physiotherapy: Physiotherapy helps to improve spinal mobility and strengthen the muscles.
- Regular exercise: Regular exercise after surgery is important to maintain and strengthen spinal mobility.

Although there may be some decrease in spinal mobility after scoliosis surgery, most patients can easily perform their daily activities and lead an active life. It is important to discuss your expectations and possible outcomes in detail with your doctor before surgery.

Microsoft Copilot:

Spinal mobility after scoliosis surgery varies depending on the type of surgery and which parts of the spine were fused. In general, the mobility of the spine may be somewhat reduced, but most patients can perform their daily activities comfortably

Factors affecting mobility:

1. Number of vertebrae fused: The more vertebrae are fused, the more spinal mobility can be reduced
2. Preoperative Mobility: Preoperative spinal mobility can affect postoperative mobility
3. Physiotherapy and Rehabilitation: Postoperative physiotherapy and rehabilitation play an important role in maintaining spinal mobility

Spinal mobility after surgery usually does not adversely affect the patient's quality of life and most patients can return to their normal daily activities