

Spondylolysis

The term spondylolysis describes a defect at the region of the vertebral arch below the upper and lower facet, the so called interarticular portion (figure 1)

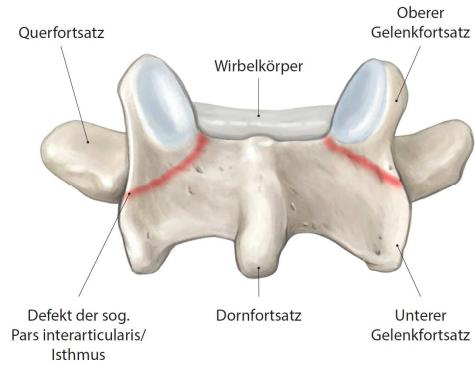


Figure 1

In most cases this defect is caused by a fatigue fracture (bony overload), rarely by an accident (fall, hit etc.). A spondylolysis can be found in 5-10% of human beings. However, only about 10% suffer from pain. In children and adolescents, the 5th lumbar vertebra is affected in 85-95% of the cases. Apart from functional (mere muscular) pain, a spondylolysis constitutes one of the most frequent causes for lumbar back pain, particularly in young athletes.

What does a patient with a symptomatic spondylolysis feel ?

- Typically the pain occurs in the lower lumbar area during or after physical activities
- Pain can be triggered by hyperextension of the spine with increase of the lumbar lordosis.
- Pain character is often punching and sharp
- Pain at rest, night pain, or radiating pain are not typical
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How can a spondylolysis develop ?

- Apart from a genetic predisposition (family history), biomechanical factors are responsible
- Following a nutcracker mechanism, the facets of the adjacent vertebrae can cause a spondylolysis (figure 2)
- Physical activities with repetitive extension and rotation of the lumbar spine (e.g. gymnastics, swimming, tennis) lead to a spondylolysis more often
- Spondylolysis on both sides can lead to a forward slipping (olisthesis) of the affected vertebra

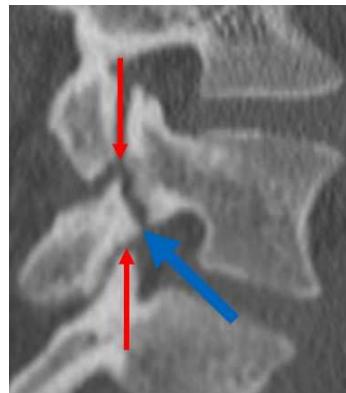


Figure 2: Detail of a computer tomography of the lumbar spine, view from the side. In terms of a nutcracker the facets of the adjacent vertebrae (red arrows) exert pressure on the bony interarticular part of the affected vertebra and thereby cause a spondylolysis (blue arrow)

What kind of imaging is indicated ?

- The first investigation is a standing radiograph of the lumbar spine from the front and from the side
- In case of typical clinical findings but an ambiguous radiograph, the next step is a tomography (Computer tomography = CT, or Magnetic Resonance Imaging = MRI)
- Due to the lack of radiation exposure and the possibility to detect early signs of overload, MRI should be preferred
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What can be done against it ?

- *If there are no complaints, no specific therapy is indicated and exertion of all kind of sports is allowed*
- *Regular follow-up (standing lateral radiographs) until the end of growth (before puberty yearly, during puberty half-yearly) to detect and observe vertebral slipping*
- *In case of pain, physiotherapy including trunk stabilizing exercises ("core stability training") and modification of sports activities (do less, do it better: reduction of the loads in extension/rotation of the lumbar spine) is successful in 90%*
- In case of strong pain, short term intake of anti-inflammatory drugs for a maximum of two weeks may help in early stages
- In early stages, especially with performance-oriented young athletes, we recommend immobilisation for 2 x 6 weeks in a cast that reduces the mechanical stress on the affected vertebra by reducing lumbar lordosis

When is an operation needed ?

- Persistent or increasing pain after at least 3-6 months of targeted and consequent physiotherapy (incl. correct daily exercises)
- Severe or progressive spondylolisthesis
- Radiating pain and / or neurologic deficits (loss of sensation, paralysis) in the legs

What kind of operations are performed ?

- If possible, the affected vertebra is stabilised within itself (figure 3)

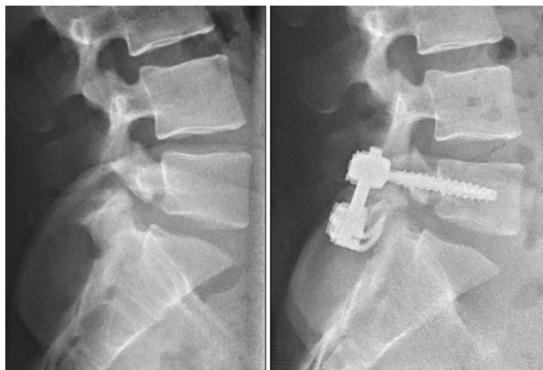


Figure 3: The vertebrae with the spondylolisthesis is repaired within itself by a screw-hook construct (so called Pars direct repair)

- An operation with fusion of the gliding vertebrae is indicated in case of local bony changes and soft tissues (nerves, intervertebral disc) and a severe forward slippage of the vertebra (figure 4)

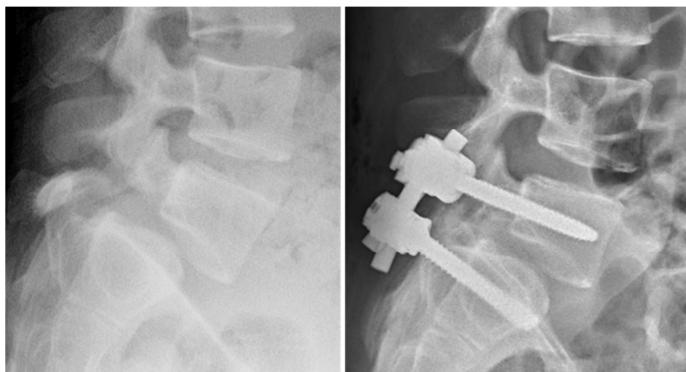


Figure 4: In case of severe slippage, a fixation and osseous fusion between the affected vertebrae is indicated

When can I become active in sports again ?

- If there are no complaints, there are no restrictions on sporting activities. In the event of complaints, sporting activities should be temporarily paused and, in coordination with physician and physiotherapy resumed in a controlled manner when the symptoms subside. After an operation, low-impact sports such as cycling, swimming and jogging are allowed again after 3 months. Contact-, ball- and high-impact sports as well as competitive sports should be started again after 6 months at the earliest – uneventful healing provided.