



Schweizerische Gesellschaft für Spinale Chirurgie

Société Suisse de Chirurgie de Rachis

Società Svizzera di Chirurgia Spinale

Swiss Society of Spinal Surgery

Quality Assessment-Kommission

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Guidelines and indications for balloon kyphoplasty

Indications for kyphoplasty are related to *osteoporotic vertebral fractures, vertebral fractures due to tumors, and traumatic fractures (without osteoporosis)*

1. Osteoporotic vertebral fractures

Basically vertebral fractures differ by the age of onset.

Fresh fractures exist less than eight weeks. Fractures older than eight weeks are considered old.

Fresh fractures: Balloon kyphoplasty is indicated, if the thoracal or lumbar fractures are associated with:

- Pain (Visual Analogue Scale of about five points or more)
- Deformation, i.e.
 - thoracal kyphosis of more than 15 ° and/or
 - lumbar kyphosis of more than 10 ° and/or
 - height reduction of vertebral body more than 1/3 compared to adjacent bodies

If these conditions are not given, patients should be treated conservatively, i.e. adequate analgetica and physio-therapeutic mobilization. Within 7 to 10 days and 4 to 6 weeks patients should receive monitoring visits. If at monitoring visits patients fulfil the aforementioned conditions, a balloon kyphoplasty should be performed.

Old fractures: Balloon kyphoplasty is indicated, if the thoracal or lumbar fractures fulfil the aforementioned conditions and, additionally, it has to be proven, that the fracture is still “active” and causes the patient’s pain. MRI examination, showing clear symptoms of T2-Image or STIR-sequence can be a good diagnostic tool for this.

Kyphoplasty is contraindicated in the case of osteoporotic fractures not causing disorders (normal sign with MRI).

2. Vertebral fractures due to tumours (p. ex. multiple myeloma and metastatic tumours)

Primary osteolytic tumours (multiple myeloma) and secondary osteolytic tumours (metastasis) within the dorsal or lumbar bodes, with or without sagging are to be considered.

The treatment of vertebral osteolytic tumours with balloon kyphoplasty is a palliative treatment in order to relieve local pain and/or prevent the appearance or worsening of a sagging with secondary neurological effects.

Cases where a vertebral biopsy is indicated in order to elaborate a diagnosis, can also benefit from a balloon kyphoplasty during the same procedure. At this time, two levels at the maximum can be considered as a proper indication. In case of palliative surgical decompression, an open-balloon kyphoplasty can be added.

Balloon kyphoplasty is contraindicated in the following cases:

- Osteocondensed tumours
- Total vertebral body destruction
- Tumours without urgent risk of vertebral collapse, for which a different palliative or curative treatment is available (radiation, chemotherapy, hormonotherapy, embolization, corporectomy, stabilizing surgery)
- Invasion of the tumour by more than ¼ of the spinal canal or by collapse of the posterior vertebral wall, with or without pluriradicular or medullar neurological effects
- Major pedicular invasion with monoradicular neurological effects. Monoradicular pain without major pedicular invasion is not counterindicated.

3. Traumatic vertebral fractures (without osteoporosis)

Indications for balloon kyphoplasty due to traumatic vertebral fractures are associated with

1. Classification of the type of fractures
2. Age of the fractures

Fractures considered to be indicated for the balloon kyphoplasty technique, without usage of additional fixation, are the one without neurological effect defined as stable (type A 1, A 2 (split < 2 mm), A 3.1 and A 3.2 (split < 2 mm); from dorsal D5 to lumbar L5).

In case of type A 1 fractures, the indication is given if the kyphotic deformity of the vertebral body is superior to 15 degrees. Between 10-15 degrees the indication will be considered if a conservative treatment is contra-indicated or inefficient. Any other post-traumatic lateral scoliotic deviation of more than 10 degrees is to be considered as an indication.

In type A 3.1 fractures, we correlate the importance of the posterior fragment with the deformity in order to determine the risk of instability and to determine the indication for a single balloon kyphoplasty or in association with other stabilization or conservative treatments.

In type A 3.3, B, C fractures, the technique can be used in association with aposterior fixation as a method of anterior spine reconstruction.

In order to obtain an optimal correction of the deformity, fractures need to be corrected within the first 3 weeks. Older fractures, above 6 weeks, are only indicated in specific cases where the conservative treatment has failed resulting in chronic pain, a pseudo-arthritis or a post-traumatic kyphotic deviation that can still be corrected (not healed fractures confirmed by MRI – STIR sequence).

Fractures are contraindicated which do not fit the indications, are pathological fractures, or show neurological effects, which requires decompression.

Requirements

Selection of patients for balloon kyphoplasty should be based on results from careful physical examination and on the patient's medical history. Fluoroscopy during medical examination can help to correlate accurately the painful foci detected by percussion directly over the spinous process of symptomatic fractures.

Balloon kyphoplasty should be performed by properly trained physicians (e.g. kyphoplasty course with expert instructors) having imaging equipment that clearly delineates key landmarks, particularly the pedicles, cortices and spinous processes. The surgeon should be qualified as spine surgeon to be prepared to initiate the decompression of the vertebral column in case of complications.

Balloon kyphoplasty should be performed with preparedness of operation. Anaesthetists should monitor the patient continuously during the operation. All surgeons undertaking balloon kyphoplasty should be accredited. Certification centre could be the Swiss Society for Spinal Surgery.

Beispiel Swiss Spine Register Fragebogen Operation Deutsch

Indikation

- * Osteoporose
- * Trauma
- * Tumor

Folgende Kriterien müssen bei osteoporotischen Frakturen obligatorisch erfüllt sein:

- * frische Fraktur <8 Wochen
- * ältere Fraktur >8 Wochen
- * Fraktur verantwortlich für Beschwerden
- * VAS persistierend >5
- * Kyphose >15° BWS
- * Kyphose >10° LWS
- * Höhenreduktion des frakturierten WK mehr als 1/3 im Vergleich zu Nachbar-WK