SURGICAL TECHNIQUE

RADIOLUCENT OPEN
INTERSPHERIC IMPLANT

ROI®

RADIOLUCENT OPEN
INTEGRASMIC IMPLANT

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Surgical approach to the disc

- The approach to the intervertebral space is performed after identification of the level concerned by image intensifier. The surgical technique used to expose the intervertebral space is the standard method used for posterior approach to the spine.

Release and discectomy

- A partial left, partial right or total laminectomy is chosen, depending on the required release. The degree of exposure of the disc must take into account implant positioning (the smallest possible resection of the lower laminae should be undertaken without damaging the inner surface of the articular processes). This type of exposure requires no sacrificing of the facets at level L5-S1, sometimes at level L4-L5 but always at L3-L4.
- After identification and verification of all nerve related areas (dural sac and underlying root), a complete epidural vessel haemostasis will ensure the surgeon a better field of view.
- The discectomy itself must be as thorough as possible.
Step 3

**Controlled distraction**

- The restoration of the desired height of the intersomatic space is obtained by alternately introducing manual distractors to the left and right hand sides of the space. Their sizing and stability allows a progressive and controlled distraction.
- Distractors are inserted flat. They are then rotated through 90° and the space is distracted to the selected height. The graduations on the shafts ensure depth insertion control.
- During preparation of the end-plate, the T-handle can be detached to give the operator more space.

Step 4

**Freshening of the end-plate**

- While the height of the intersomatic space is maintained by the distractor, the bed for the implant and the grafting surfaces can be prepared using the fenestrated round Curette. Each side of the intervertebral space is freshened as widely as possible by alternating the placement of the distractor to maintain the height.
- The fenestrated round Curette is angled towards the median line on alternate sides thus allowing the preparation of the median area, which should be cleared of all disc residue. The posterior vertebral common ligament is not systematically opened on the mid-line. This stage completes the discectomy and preparation of the fusion chamber.
Selection of the implant

**Step 5**

Selection of the implant

- Trial ROI implants are mounted on the cage holder, and used to ascertain the correct size for the implant.

**Note:** When in doubt, use a smaller implant on which one can exercise a lordosing effect by putting the pedicular screws under pressure.

**Step 6**

Preparing the cage

- The cage is attached to the short cage holder.
- The cage holder allows the temporary closure of the cage by means of a medial wall which facilitates the positioning of the graft and ensures the stability of the implant for introduction.

Filling the implant

**Step 7**

The ROI implant is held in the bone graft support during the positioning of the graft material inside the cage. There is a graft compactor to aid filling. One must ensure that the graft is of reasonable consistency to be held in the cage.

First cage positioning and graft supplement

**Step 8**

Positioning of the first implant

- While the intersomatic height is maintained by the distractor on one side, the first ROI implant can be introduced on the opposite side, using the short cage holder. (The implantation can be aided by careful use of a small mallet).

**Note:** The temporary medial wall of the cage holder is positioned on the side of the dural sac. A gentle impaction, on the axis of the ROI implant, is carried out under visual and X-ray control. By moving the implant both downwards and outwards at the same time, one obtains an orientation which is as sagittal and external as possible.

- After impaction, the short cage holder and the implant should remain in position until supplementary graft is added.

**Step 9**

Fusion chamber graft supplement

- From the opposite side to the first ROI implant one should now remove the distractor. At this point supplementary bone graft is added in the mid-section of the end-plate. Cancellous bone graft is introduced and positioned, using a bone graft spatula, against the first implant and filling the medial space. One should continue until there remains just enough space for the second ROI implant.
Second cage positioning and graft supplement

**Positioning of the second implant**
- The second ROI implant, fixed onto the long cage holder, can now be inserted. The long cage holder is used to impact the second implant without risking movement of the first implant. Both cage holders are inserted under X-ray control in order to ensure the perfect alignment of the radio-opaque markers and the ideal positioning of both implants. The optimal position should be as deep as possible in the sagittal plane and as lateral as possible.
- Remove both cage holders.
  **Note:** It is quite possible to add a few cancellous bone fragments to the lateral side of each implant.

**Stabilization and compression**
- Once the ROI implants are in situ, intersomatic space stabilization should be ensured by using a posterior osteosynthesis system such as Easynpine® giving compression on a curved rod, optimizing lordosis as well as the stabilization of the ROI implants.
- One must make sure there is total radicular freedom and in particular, that lordosing compression has not given rise to any foraminal stenosis.