

Total cervical disc replacement with the Discocerv® Cervidisc evolution cervical prosthesis: Early results

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Purpose

ANTERIOR discectomy and fusion is still the gold standard procedure for symptomatic cervical disc disease. However, long-term results following fusion showed evidence of adjacent segment disease, especially in young and active population. This led to the development of stabilization techniques by means of cervical mobile prostheses. Today several such total disc replacement devices are available. Most of them are under clinical evaluation. The purpose of the present study is to evaluate the early overall outcome in patients operated with Discocerv® Cervidisc Evolution semi-constrained cervical prosthesis (figure 1), made of ceramic materials (Zirconia & Alumina). Based on a 8-years experience on a previous version, this new prosthesis has already been implanted in more than 20 countries since April 2006.



Fig 1: Discocerv® Cervidisc Evolution cervical mobile prosthesis

Methods

SEVENTEEN consecutive patients (8 men / 9 women), part of a long-term prospective study of a 35 patient population, underwent one or two level total cervical disc replacement (TCDR) with Discocerv. Diagnosis and instrumented levels are presented in figures 2 and 3. Prior to surgery, out of the active population, 66 % (10 patients) were in sick leave.

Diagnosis

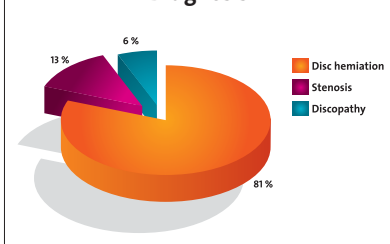


Fig 2: Diagnosis

Instrumented levels

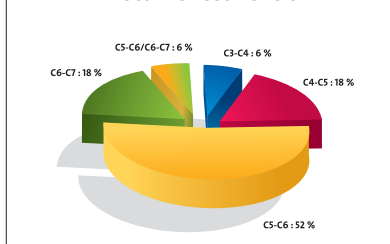


Fig 3: Instrumented levels

Mean follow up was 2.8 ± 1.9 months [0-5.8].

Evaluation criteria included:

- VAS 1 to 100mm self-reported cervical and radicular pain,
- Neck Disability Index (NDI),
- Symptoms evolution (ODOM score),
- Work status,
- Patient Satisfaction Index (PSI),
- Mobility preservation.

Results

SURGERY duration was 67.1 ± 20.2 min [35-120]. Hospital stay was 3.6 ± 1.5 days [2-7]. No per-operative or post-operative complications were reported in this series, except for excessive bleeding in one patient without any further consequences.

- All the patients of the active population resumed their previous work between 2 and 6 months after the surgery.
- ODOM score showed 100% excellent and good results.
- Six months post-operatively, mean VAS self-reported cervical and radicular pain and NDI significantly decreased as shown in figures 4 and 5.

Pain evaluation (VAS)

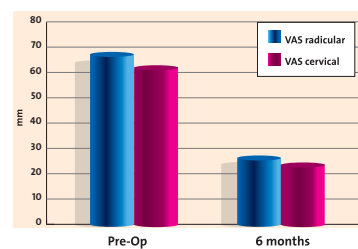


Fig 4: Pain evaluation

Functional evaluation (Neck Disability Index)

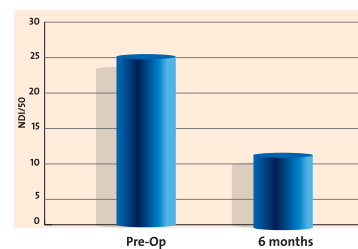


Fig 5: Functional evaluation

- Quantitative radiographic analysis showed satisfactory restoration of cervical mobility at the operated levels:

| Mobility | 3 months post-op | 6 months post-op |
|------------------------|--------------------------------|--------------------------------|
| Mean flexion-extension | $6.2^\circ \pm 4.5$ [0.5-14.6] | $6.1^\circ \pm 3.9$ [2.2-13.6] |
| Mean lateral bending | $5.1^\circ \pm 3.7$ [0.2-11.9] | $5.9^\circ \pm 3.8$ [0.4-9.8] |

Clinical case: example of a patient operated with Discocerv®



Pre-op neutral x-ray



Pre-op oblique x-rays



Pre-op flexion-extension x-rays

Diagnosis:

45 year old man, working in tapestry and decoration, consulted in October 2005 for severe left cervico-brachial neuralgia.

Pre-operative diagnosis was performed through X rays (see opposite illustrations) and MRIs :

The clinical examination revealed cervical stiffness with pain in the left upper limb, left bicipital paresis and no tricipital reflex.

First MRI (November 2005) showed a C5-C6 left foraminal stenosis due to osteophyte formation confirmed with the oblique X rays. A second MRI (April 2006) confirmed the initial diagnosis.

Surgery:

On May 2006 the patient underwent surgery for C5-C6 discectomy by anterior approach (Cloward technique) and left side postero-lateral bony decompression, followed by disc arthroplasty with Discocerv prosthesis.

Results:

No complications were reported at maximum follow-up (9 months)

Dynamic functional X rays show the restoration of mobility both in lateral bending and in flexion-extension (see opposite illustrations). All neurological symptoms were fully relieved. The patient experiences mild fatigue-related discomfort at the end of the day but is fully satisfied with the result of the surgery. he resumed his previous job and all daily activities.



Post-op lateral x-ray



Post-op lateral bending x-rays (right and left)



Post-op flexion-extension x-rays

Conclusion

Early results with Discocerv prosthesis are encouraging and confirm the long term 96% mobility obtained at 8 years follow-up with the first generation of the device, i.e. Cervidisc™. Further ongoing follow-up on a larger group would hopefully confirm these findings.