Early results of the NuNec cervical disc replacement

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**Object:** The object of this study is to evaluate clinical effectiveness of cervical disc replacement using the NuNec system.

**Methods:** Ten patients (Seven male and three female) with a mean age of 47.3 years were enrolled. They presented with cervical radiculopathy and/or myelopathy with or without neck pain. After failure of conservative management, a standard anterior cervical discectomy was carried out and a NuNec disc was implanted in the affected level. The involved level was C3/4, C4/5 and C6/7 in one patient respectively and C5/6 in seven. Neck score of Japanese orthopedic association (JOA score) and pain in the neck and upper extremities by Visual analogue scale (VAS, range: 0 to 100) were evaluated. Segmental ROM and height between two vertebrae were measured. The follow-up period was average 6 months (3 to12). Adverse effect during and after surgery was also checked

**Result:** JOA score improved from 21.2/29 to 26.3/29. VAS improved from 70.4 to 21.0 in the neck and from 75.3 to 15.2 in the arm. Segmental motion was 4.5 degrees preoperatively. It increased to 6.8 degrees postoperatively. The vertebral height also increased 7.6mm. No adverse effect was observed. One case showed slight migration of the implant (2mm to front), but settled in six months. She had no clinical symptom.

**Conclusion:** Although it is an early result, total disc replacement with the NuNec showed clinical improvement. It also increased segmental ROM and height slightly.

**Six cases showed neck pain.**

Patients presented clinically with cervical radiculopathy and/or myelopathy with or without neck pain. A standard anterior cervical discectomy was carried out and a Bryan disc was implanted in the affected levels. A total of 59 prosthetic discs were implanted, in 49 patients at a single level and in 5 at two adjacent levels. The neurological status was evaluated pre-operatively and at one and two years thereafter. Plain X-rays, CT, and MRI were used for pre-operative diagnostics. Post-operative follow-up was done by X-rays.

**Findings:** All patients had an excellent or good neurological outcome according to the Odom criteria. Loss of function (motion range < 3 degrees) was found in 7 (12%) out of 59 Bryan discs at two years after surgery. Heterotopic ossification (HO) of the McAffee grades 1-4 was seen in a total of 17 (29%) segments. There were no implant dislocations or migrations.

**Conclusions:** Implantation of the Bryan disc resulted in excellent or good neurological outcome in all patients. The surgical technique was safe and without complications. Twelve percent of the implanted Bryan discs lost mobility at two years, mainly due to HO. A trend was seen towards development of HO in the operated segments. Further investigations with longer follow-up periods and with a control group (e.g. fusion with intervertebral cage) will be necessary for a definitive assessment of the long-term functionality and benefits of artificial cervical discs. Mean VAS in the neck decreased from 56.8 preoperatively to 11.8 postoperatively and arm pain decreased from 68.1 to 18.0.