Clinical: Cervical new motion preservation technologies

Image Friendly Peek-ceramic Cervical Total Disc Replacement: One Year Experience
L. Oliveira¹, L. Marchi¹, E. Coutinho¹, L. Pimenta¹,²
¹Instituto de Patologia de Coluna, São Paulo, Brazil, ²University of California - San Diego, San Diego, CA, United States

Introduction: Many surgical options are available for the treatment of the cervical spine disease. Total disc replacement has been reported to restore motion in the cervical spine, avoiding some complications of fusion like adjacent level disease. The disc incorporates a ceramic-on-ceramic design that is believed to increase durability and eliminates the potential problems of wear debris from other bearing surfaces such as polyethylene. And this ceramic ball and socket in a peek core reduces MRI artifacts, improving postoperative radiological analysis. In pre-clinical testing, this TDR was favorably compared to other artificial discs currently in FDA clinical studies. It is also designed to ensure proper placement because of its "self-centering" feature. The purpose of this study is to evaluate the indications, pain relief, radiographics, surgical technique and outcomes of the cervical disc replacement utilizing the novel peek-ceramic system.

Methods: 15 patients with moderate forms of cervical disc degeneration underwent a total of 16 cervical total disc replacements from C4C5 to C7-T1. The mean age was 43 years old (28 to 60 years). 13 patients presented with degenerative disc disease and 2 patients with adjacent level disease, with one Klippel Feil case. Neural decompression was performed in standard Smith-Robinson technique. Radiographic and clinical outcomes were collected preoperatively, at 1 week, at 1, 3, 6 and 12 months postoperatively. The Neck Disability Index (NDI) and Visual Analog Scale (VAS), TIGT questionnaires and EuroQol (EQ-5D) were used to access pain and functional outcomes.

Results: At twelve months follow-up, the ROM was not statistically different from preoperative evaluations. The sagittal alignment was satisfactory maintained. Mean blood loss was 118 cc (range < 50 to 550 cc). Mean length of surgery was 106 minutes (range 80 to 210 min). No intraoperative complications occurred. All outcomes assessment showed statistically differences during all the postoperative follow-up periods.

Conclusions: Following cervical arthroplasty with the image-friendly peek ceramic disc, radiographic and clinical outcome measures were encouraging. We are able to say that this cervical artificial disc is a good and effective option for the treatment of painful cervical disc disease associated or not with radiculopathy. This is the first report about a ceramic prosthesis option for total disc replacement, providing to be a valuable alternative to other metal discs, generating better postoperative image control and good clinical outcomes.