Is return to professional rugby union likely after anterior cervical spinal surgery?

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We have examined the outcome in 19 professional rugby union players who underwent anterior cervical discectomy and fusion between 1998 and 2003. Through a retrospective review of the medical records and telephone interviews of all 19 players, we have attempted to determine the likelihood of improvement, return to professional sport and the long-term consequences. We have also attempted to relate the probability of symptoms in the neck and radicular pain in the arm to the position of play. Neck and radicular pain were improved in 17 patients, with 13 returning to rugby, the majority by six months after operation. Of these, 13 returned to their pre-operative standard of play, one to a lower level and five have not played rugby again. Two of those who returned to the game have subsequently suffered further symptoms in the neck, one of whom was obliged to retire. The majority of the players with problems in the neck were front row forwards.

A return to playing rugby union after surgery and fusion of the anterior cervical spine is both likely and safe and need not end a career in the game.

Rugby union may predispose individuals to the development of cervical spondylosis¹ causing symptoms which can be broadly categorised into axial neck pain and cervical radiculopathy. Patients often have a combination of these symptoms. In 1996, O'Brien² described two front row rugby players with symptomatic cervical disc prolapse and degeneration, both of whom retired from the sport because of their symptoms, one having had surgery. Shelley, Butler and Timlin³ noted 11 patients with acute injuries to the cervical spine in Irish rugby players.

The majority of patients with symptoms of cervical spondylosis can be successfully treated conservatively, but a small proportion will need an operation. Anterior cervical discectomy and fusion is one option for surgical treatment. Since the advent of professional rugby union there has been an increase in pressure on players to return to the sport. Players and coaches alike are keen to establish whether surgery will enable a player to play at the pre-injury level and whether it is safe to do so. There are no reports in the literature describing the outcome of anterior cervical decompression and fusion in rugby players, nor comment on the safety of returning to rugby after this procedure. The only guidance which might be applied is that of Torg and Glasgow.⁴ In 1991, they stated that whereas a

patient who had undergone a successful one-level fusion could return to sport, a successful two- or three-level procedure was a relative contraindication.

The advice offered differed in the answers to a questionnaire to cervical spine surgeons and sports physicians. Morganti et al⁵ found that the seniority of the surgeon and a subspecialty interest affected the decision on the advisability of returning to play after injury to the cervical spine. They suggested that there was no consensus on the management of many patients with such an injury.

At our institution, one surgeon (PRD) has a large experience of surgery to the anterior cervical spine in professional rugby union players. The aim of this study was to gather information that would prove useful to others when counselling players and coaches prior to surgical intervention.

Patients and Methods

We identified 19 professional rugby players who underwent anterior cervical discectomy and fusion between 1998 and 2003. No patients were excluded. Their mean age at operation was 28 years (22 to 37). All patients had experienced neck and radicular pain, the latter being the main indication for surgery, and had failed to improve with conservative treatment. Some patients had a significant

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weakness shown on examination. MR imaging had shown an abnormality prior to surgery in all the patients.

We also studied the position played to see if this had influenced the likelihood of developing spondylotic symptoms. In particular, we were interested to see if scrummaging had an adverse effect on front row players and if there was a difference between forwards and backs.

The surgical procedure was similar in all cases. A standard anterior approach to the cervical spine was performed, the disc removed and the end-plates prepared. A cage implant was used to restore the height of the disc space. In the early cases a titanium cage (Syncage C-Synthes, Oberdorf, Switzerland) was used, but for later patients a peek cage (Cervios; Synthes Ltd, Welwyn Garden City, United Kingdom) was preferred. All procedures involved the introduction of a locking type-plate (cervical spine locking plate (CSLP), Synthes) to increase early stability and the chances of fusion. A single level fusion was required in 17 patients with the remaining two undergoing a two-level procedure. Plain radiographs alone were used to assess fusion in a small number of cases, with fusion deemed to be complete when a bridge of continuous bone was clearly seen crossing the disc space, or anterior to it. In the majority of patients CT was used to assess fusion. If plain radiographs failed to demonstrate fusion at three months a CT was used to assess the fusion mass. Patients were authorised to return to sporting activities when radiologically-proven fusion had occurred.

Two methods were used to obtain information on outcome. The medical records of all patients were reviewed retrospectively. A telephone interview was conducted, which allowed us to obtain supplementary information on the player's career in rugby before and after the spinal surgery. The mean follow-up was for 17 months (7 months to 5 years). The presence of neck and radicular pain was noted, as was the timing of return to sport and whether the position played had any effect on whether return was possible.

Results

The overall results regarding neck pain and radicular symptoms after anterior cervical spinal surgery in this group were similar to those of an unselected population undergoing operation for degenerative disease of the cervical spine.⁶ Radicular pain was eradicated in 15 patients, improved in two and two had no change. Neck pain was eradicated in eight, improved in nine and two had no change. These latter two were also had no relief of their radicular symptoms. In total, there were 13 front row forwards. Other positions included one second row and two back row forwards, and three backs.

A total of 13 players returned to their previous level of rugby. One returned to professional rugby but played in a lower division. Nine of the 13 returned to rugby at six months after operation (5 to 17). Only one player took more than 12 months to return to playing. This was princi-

pally because of a concomitant low back pain. Five players did not return to the sport. In three there was insufficient improvement in the symptoms, with two having a persistent neck pain, one of whom had undergone a two-level fusion. Both of these patients had a second level decompressed below the original operation, which was also unsuccessful, and they are currently on chronic pain management programmes. The other patient who failed to improve had significant weakness of the triceps which did not recover sufficiently for him to be competitive. He also had a second procedure but did not return to sport. Another required major surgery to a shoulder but was refused insurance to continue playing despite good resolution of the cervical symptoms. The final patient had subsequent low back pain and retired, although he commented that in the absence of the symptoms of the lumbar spine he would have returned to rugby as he had good resolution of the cervical symptoms.

Those players who returned to rugby generally remained in good health. However, two had a recurrence of symptoms. One who had undergone a two level-fusion presented again five years after this procedure with new neck and radicular symptoms caused by degenerative changes at an adjacent level. The symptoms were not sufficiently severe to prevent him playing at the time of final follow-up. The other player retired because of neck pain two years after surgery to the cervical spine. A subsequent MR scan has not shown any abnormality and the operation has provided him with 18 months further rugby at senior level.

Discussion

The predominance of front row forwards in this series that suggests that scrummaging over a number of years at this high level of performance may be a risk factor for developing degenerative disease of the cervical spine. There were no obvious differences in the distribution of neck problems between other forwards and backs but the small numbers in these groups may mask subtle differences which could be present.

As to the likelihood of returning to rugby after anterior cervical decompression in relation to the position played, the small numbers available make definite conclusions difficult. However, of the 13 front row forwards, nine returned to the game after surgery. Of the other six players representing all other positions, five returned to rugby. Despite the considerable stresses which front row players apply to their necks, over two-thirds were able to return to rugby after operation. This is useful information for those who feel that such surgery is likely to precipitate the end of a player's career. If the two players who stopped playing because of symptoms in the shoulder and lumbar spine are disregarded, it will be appreciated that anterior cervical spinal surgery will probably not end a rugby player's career. The clinical outcome was equivalent to the results following this operation for degenerative cervical spinal disease.⁶ Patients with a single level fusion did better than those with

a two-level fusion. Although only two players underwent a two-level fusion both had problems post-operatively. One gained no relief from surgery and the other, despite returning to rugby, had symptoms of disease at adjacent levels.

No serious adverse effects were reported in the 14 players returning to rugby after surgery. One developed new symptoms of radicular pain adjacent to a two-level fusion but this was not severe enough to stop him playing, and another had a recurrence of neck pain two years after operation but with no significant abnormality being detected by an MR scan. Our conclusion is that return to rugby union following anterior cervical spinal surgery is safe. In the short-term there is no evidence that a single level fusion results in patients experiencing significant early clinical symptoms. More caution should be employed in making recommendations after two level surgery, as adjacent level degeneration may be a more significant early problem.

The main limitation of this study, despite it being the largest published series to date, is the small number of patients involved. Nevertheless, we believe that the information obtained will be of value in the absence of any pre-existing guidelines. The other major limitation of the study was its retrospective nature, making details difficult to con-

firm. However we feel enough data were obtained to draw useful conclusions.

A return to rugby union after successful anterior cervical spinal surgery is a safe and probable outcome. A more cautious approach is needed when dealing with multi-level disease.

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