Cervical Spine Surgery in Ankylosing Spondylitis: 
Is The Outcome Good?

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Summary
Objective. To assess retrospectively, the outcome of cervical spine surgery in patients with ankylosing spondylitis (AS).
Methods. A cross-sectional study of 3464 patients with identified AS, 19 patients of whom had cervical spine surgery. A self-administered questionnaire (including the use of 10 cm visual analogue scales, 0 = none, 10 = worst) assessing the complications of the surgery, patients’ neck symptoms and post-surgery functional ability was sent to the 19 patients. Available casenotes and radiographs were reviewed.
Results. The mean duration of follow-up was 10 years. One patient had two separate cervical spine operations. The types of surgery performed included cervical fusion (n=7), osteotomy (n=7) and laminectomy (n=6). Six patients had minor complications as a result of surgery. The majority of patients (93%) felt that their surgery had been successful. Most patients (81%) had a reduction in neck pain (mean pain score=3.1, SD 2.8) but increased neck stiffness (mean stiffness score= 8.0, SD 2.9). Postoperative radiographs of 7 patients showed complete ankylosis of the cervical spine. Generally, few patients reported difficulty with reading/watching television (6%), sleep (19%) or driving (36%). A third of the patients were still in full time employment.
Conclusions. About 1 in 200 patients with AS undergo cervical spine surgery. The surgery is often successful and complications are usually minor. Neck pain is often better after surgery and any remaining neck symptoms do not significantly affect the patient’s sleep or functional activities. In this retrospective study, the long term outcome of cervical spine surgery in patients with AS appears to be good.

Key words Cervical Spine Surgery, Ankylosing Spondylitis, Outcome.

INTRODUCTION

Ankylosing spondylitis (AS) is a disease where there is a tendency for ossification of ligaments and joints resulting in fusion of the spinal column (1). Neck involvement is not uncommon (2), especially in women and patients with a long disease duration (3). Patients are at risk of atlanto-axial subluxation (4), cervical spine fractures (5,6) and cervical spinal stenosis (6,7) and may require surgery as a result of these complications. Some patients have severe spinal flexion deformity which restricts their visual field below a horizontal view line and may benefit from cervical osteotomy to correct their line of sight (8). The inflexibility of a rigid cervical spine may give rise to problems during endotracheal intubation (5,9) and make surgical exposure difficult (6). Furthermore, patient transfer and positioning prior to surgery must be done cautiously as the ankylosed spine in susceptible to fractures or dislocation (9). The use of grafts and stabilisation devices may be difficult in the presence of osteoporosis that occurs in the immobile spine (6). Thus cervical spine surgery in patients with AS is a major procedure with potential hazards. Ideally, a prospective study of all patients with AS, who come to cervical spine surgery, should be carried out. Unfortunately, no such investigation has been performed. We therefore elected to study, retrospectively, a cohort of over 3,000 patients to determine how many had had surgery and how the results were perceived. This study assesses the nature of neck surgery in patients with AS and determines the patients’ perception of the outcome of their surgery.

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MATERIALS AND METHODS

A cross-sectional study of 3464 patients with AS on our database was done to identify those patients who had had cervical spine surgery. About a third of the patients have been seen at the Royal National Hospital for Rheumatic Diseases (RNHRD) and two thirds are members of the National Ankylosing Spondylitis Society (NASS). As previously described, the diagnosis of AS has been substantiated by 2 separate assessments (10,11). Nineteen patients reported previous cervical spine surgery. Of these, 9 have been seen at the RNHRD and their case-notes were reviewed. Cervical spine and sacroiliac joint radiographs of 7 patients were available and were assessed.

A self-administered questionnaire was sent to the 19 patients who had had cervical spine surgery. The questionnaire focussed on the nature and complications of the surgery, the functional ability and patients' neck symptoms after the surgery. The effect of the surgery on the patients' neck symptoms, including pain and stiffness was assessed using 10 cm visual analogue scales (0=none; 10=worst). Disease activity was determined with the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) (12). The overall functional ability of the patients after surgery was measured with a validated instrument, the Bath Ankylosing Spondylitis Functional Index (BASFI) (13), consisting of 10 questions relating to the patients' ability to perform different tasks. A high score indicates poor functional ability. In this retrospective analysis the patients were also asked about the effect of their neck symptoms on activities which might have been affected by neck pain and stiffness such as work, sleep, reading/watching television and driving. At the same time, 81 consecutive in-patients, admitted for intensive physiotherapy were assessed in terms of disease activity and function. These subjects included patients from the entire spectrum of disease, all of whom required aggressive in patient therapy.

RESULTS

Of the 19 patients who had had cervical spine surgery, 16 (84%) completed the questionnaire. One of those remaining three patients had died of a cause unrelated to the surgery and the other two did not respond. The demographic data of the patients, indication for surgery, the surgery performed and outcome of surgery are presented in Table I. The mean current age of the patients was 47.0 years (SD 14.2). The mean disease duration at surgery was 10 years (range 2-30 years, SD 7.8). The patient who died, did so 2 years after his neck procedure. One patient had two separate neck operations for different reasons with an interval of six years between the surgical interventions. Cervical fusion had been performed in 7 patients, 7 had had an osteotomy and 6 had undergone a laminectomy. The patients had their surgery performed at different hospitals in the United Kingdom, apart from 4 who had undergone their surgery at one institution.

Complications of neck surgery were minor and had occurred in only 6 patients. One patient had a wound infection while another had developed a pressure skin sore at the back of this head. Four patients reported paraesthesiae in their limbs post-operatively. The paraesthesiae eventually resolved in three patients and the fourth patient, who had the persistent symptom in his arm, described it as being mild.

Post-operative cervical radiographs of 7 patients showed complete ankylosis of the cervical spine. Stabilisation devices (Hartshill rectangle (14), wires and plates) were present in 6 and no displacement of any of the devices was seen.

The majority of patients (93%) stated that their surgery had been successful (Table I) and reported no recurrence of symptoms. Only one patient, who underwent a laminectomy because of radicular pain, had persistent symptoms whilst another had recurrence of pain five years after a successful operation. Generally, patients reported little neck pain after surgery and the mean pain score was 3.1 (SD 2.8). Out of 16 patients who completed the questionnaire, 13 (81%) reported a reduction in neck pain and only one patient felt the pain was worse after surgery. In contrast, neck stiffness (resistance to movement) was reported to be the same or worse after surgery in the majority of patients (88%) and the mean stiffness score was 8.0 (SD 2.9).

The mean disease activity score (BASDAI) and functional index (BASFI) was 5.56 (SD 2.09) and 7.07 (SD 1.96) respectively. By comparison, the mean BASDAI and BASFI scores of the random 81 inpatients were 4.54 and 4.35 respectively. The patients with cervical spine surgery thus had more active disease and severe functional disability overall. However, the neck pain and stiffness after surgery did not specifically affect the patients' functional ability significantly. Since this was a cross-sectional study, we cannot state whether the apparent increased disease severity was a phenomenon that preceded the surgery. Few patients (6%) have difficulty reading or watching television. Only 36% of the patients who were able to drive prior to surgery, have difficulty driving after the surgery. In addition, only 19% suffered difficulty with sleep as a result of their neck symptoms after the operation.