

Early fracture of clavicle following neck dissection

WAYNE HALFPENNY, F.R.C.S., F.D.S.R.C.S., NIC GOODGER, M.B.B.S., F.D.S.R.C.S.*

Abstract

Fracture of the clavicle as a late complication following radical neck dissection is rare, with an incidence of approximately 0.4–0.5 per cent. We report a case where fracture occurred early following a selective neck dissection.

Key words: Clavicle; Fractures; Lymph Node Excision; Neck

Introduction

Neck dissection has an essential role in the management of cancer of the head and neck. However, it is not without complication. The introduction of selective neck dissection¹ has done much to reduce this when compared with the radical neck dissection initially described by Crile in 1906.²

Injury to the spinal accessory nerve (SAN) remains a common complication even after selective neck dissection³ resulting in atrophy of the trapezius muscle and shoulder drop syndrome. Short *et al.*⁴ compared shoulder pain and dysfunction after neck dissection with, or without, preservation of the spinal accessory nerve and found significantly less pain and functional disability where the accessory nerve was preserved. However 26 per cent of their patients with preserved accessory nerves had moderate to severe pain and high disability scores. This was more noticeable when neck dissection was carried out on the side of the dominant hand.

Previous reports^{5–10} have noted the unusual problem of shoulder pain and disability associated with sternoclavicular joint dislocation and enlargement leading to fracture of the clavicle in some cases, occurring as a late complication following injury to the SAN.

We report an unusual case of early mechanical fracture of the clavicle following selective neck dissection.

Case report

A 73-year-old man with a stage III squamous cell carcinoma of the right tonsil underwent a composite resection of the primary tumour and right selective neck dissection, with reconstruction using a left radial forearm fascio-cutaneous flap (non-dominant hand). Following surgery there was evidence of a right shoulder drop despite preservation of the SAN during the procedure. The IIIrd and IVth cervical nerves were not preserved. Post-operatively he developed a severe chest infection and physiotherapy to the right shoulder was delayed for two weeks.

Three weeks following surgery, whilst undergoing physiotherapy, the patient experienced acute pain in the right shoulder on mobilizing from the chair. On examination the

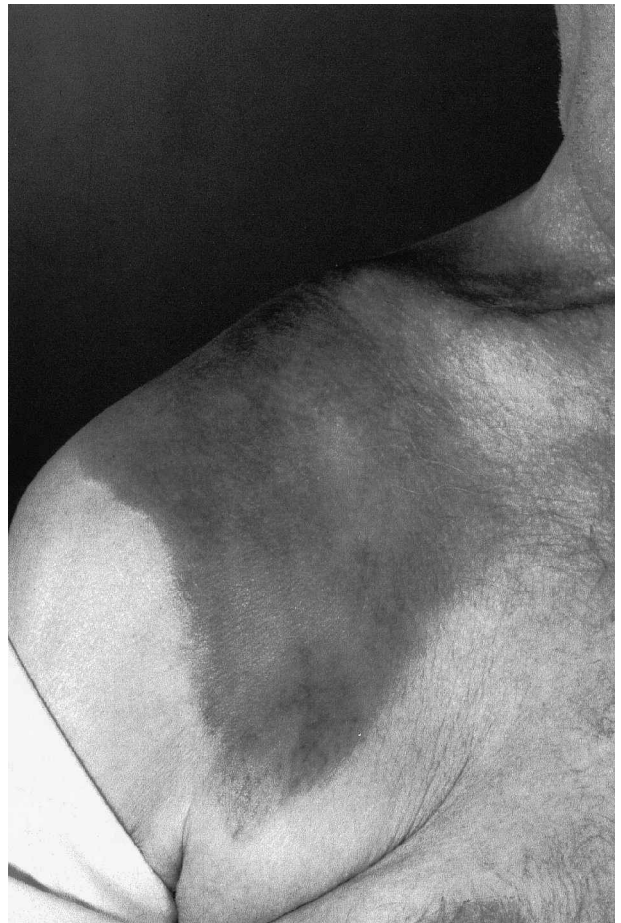


FIG. 1

Obvious fracture of the right clavicle with pronounced shoulder drop and wasting of the trapezius muscle.

following morning there was an obvious fracture of the middle third of the right clavicle and extensive bruising in this area. There was notable wasting of the right trapezius muscle and a pronounced shoulder drop (Figure 1).

From the Department of Oral and Facial Surgery, Ipswich Hospital and the Department of Oral and Maxillofacial Surgery*, Guy's Hospital, London, UK.

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FIG. 2

Radiograph showing displaced fracture of right clavicle.

Views of the right clavicle confirmed a displaced vertical fracture with no evidence of bony metastasis (Figure 2). There was no evidence of sternoclavicular joint dislocation or enlargement. Treatment was supportive with a figure of eight bandage. The fracture had clinically united after five weeks.

Discussion

Injury to the SAN remains one of the most frequent complications following neck dissection even with the move away from classical radical neck dissection.³ Certainly the long course of the nerve in the neck increases the chance of damage during dissection. The motor supply to the trapezius muscle comes from the SAN although there is some dual innervation via the IIIrd and IVth cervical nerves. Preservation of these nerves during a radical neck dissection has been shown to reduce post-operative shoulder disability.¹¹

Denervation of the trapezius muscle results in displacement of the scapulo-humeral complex in a forwards and downwards direction. This along with the pull of the unsupported arm results in torsional forces to the sternoclavicular joint and to the clavicle itself. The subsequent syndrome of sternoclavicular joint enlargement^{5,7} with progression to clavicular fracture in some cases^{6,8,9} is rarely reported in the literature, with an incidence of approximately 0.4–0.5 per cent.¹⁰ Srauss *et al.*¹² reported a case following radical neck dissection and radical radiotherapy and attributed this to altered mechanics of the shoulder girdle and devascularisation of the clavicle itself.

In this case fracture occurred early, prior to radiotherapy, without sternoclavicular joint derangement. Although a pathological fracture from metastasis to the clavicle cannot be totally excluded, the absence of a destructive lesion radiographically and the evidence of clinical union support the diagnosis of mechanical fracture.

Although intensive physiotherapy programmes have been reported to provide rehabilitation for patients with shoulder drop syndrome,^{13,14} these should be monitored with the above comments in mind. In addition it is recommended that every effort be made to preserve both the SAN and the IIIrd and IVth cervical nerves during any neck dissection.

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Address for correspondence:

Mr W. Halfpenny,
Department of Oral and Facial Surgery,
Ipswich Hospital,
Ipswich IP4 5PD, UK.

Fax: +44 (0)1473 703158

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