Bone grafting of scaphoid non-unions: a simple distraction technique to optimise fracture exposure

AG MARTIN, ND DOWNING, TRC DAVIS
Dept. Hand Surgery, Queen's Medical Centre, Nottingham, UK

CORRESPONDENCE TO

AG Martin, Department of Hand Surgery, Queen's Medical Centre, Derby Road, Nottingham NG7 2UH, UK
E: antmartinincardiff@hotmail.com

BACKGROUND

Scaphoid non-unions can be successfully treated with open reduction, bone grafting and internal fixation.^{1,2} It is vital that the fracture site is adequately prepared for receiving bone graft, ensuring that all remnants of fibrous healing are excised to expose a bleeding cancellous bone bed.³ To facilitate this, exposure requires mobilisation and distraction of the scaphoid poles. Traditionally, instruments such as lamina spreaders have been used to achieve this. Whilst effective, they have the disadvantage of obscuring much of the recipient graft bed and require frequent re-positioning. The use of temporary mini external fixators has been described with good results.⁴ We describe a simple and inexpensive method of distraction which allows excellent fracture visualisation and bone graft placement.

TECHNIQUE

A standard volar approach is used to expose the scaphoid non-union. Two Kirschner wires (1.25–1.5 mm) are inserted into the two scaphoid poles, parallel to each other and perpendicular to the axis of the scaphoid. The wires are trimmed and the distal wire is fashioned to produce a frame construct (Figs 1 and 2). Note that the length of the horizontal limb will determine the degree of distraction. It is useful to overdistract the scaphoid to facilitate graft insertion. The wires are removed once adequate preparation and grafting is achieved and internal fixation can proceed.

Figure 1 Insertion of K-wires into scaphoid.

Figure 2 Diagrammatic representation of K-wires inserted and fashioned to the distract scaphoid.

DISCUSSION

This technique utilises inexpensive materials and basic trauma surgery skills. The cost can be minimised by using a single, double-ended Kirschner wire cut in two. The surgeon can operate without second surgeon assistance, if necessary, and achieve optimal exposure at this crucial stage of scaphoid non-union surgery.

References

1. Barton NJ. Experience with scaphoid bone grafting. *J Hand Surg Br* 1997; **22**: 153–60.
2. Munk B, Larsen CF. Bone grafting the scaphoid non union: a systematic review of 147 publications including 5246 cases of scaphoid non union. *Acta Orthop Scand* 2004; **75**: 618–29.
3. Fernandez DL. Anterior bone grafting and conventional lag screw fixation to treat scaphoid nonunions. *J Hand Surg Am* 1990; **15**: 140–7.
4. Christodoulou L, Chamberlain ST. Internal fixation of scaphoid fractures with an AO mini-fragment lag screw, using a temporary interoperative AO mini fragment external fixator. *J Hand Surg Br* 1999; **24**: 676–8.

An improvised delivery system for irrigation

TJ WALTON¹, S HEADS², RJ PARKINSON¹, TRL GRIFFITHS¹

¹Department of Urology, Leicester General Hospital, Leicester, UK

²Directorate of Nursing, Kettering General Hospital, Kettering, UK

CORRESPONDENCE TO

TJ Walton, Department of Urology, Leicester General Hospital, Gwendolen Road, Leicester LE5 4PW, UK
E: tjwalton1974@btinternet.com

INTRODUCTION

Occasionally, urologists are asked to see patients requiring temporary bladder irrigation at hospitals without stocks of specialist irrigation apparatus. One option is to transfer the patient to a urology ward, but often there are outstanding medical issues predicated continued specialist input. Here, we describe an

Figure 1 Improvised irrigant delivery system. The Bard Flip-Flo® Catheter Valve in the 'on' position attached to the irrigation channel of the 3-way catheter. The flexible latex tubing of the valve fits snugly over the fixed Luer lock of the blood administration set, producing a watertight seal.

improvised system for delivering temporary bladder irrigation, utilising readily available components and the novel modification of a catheter valve.

TECHNIQUE

As shown in Figure 1, the tapered plastic spigot of the bladder catheter valve (Bard Flip-Flo® Catheter Valve, CE0086) inserts into the irrigation channel of a 3-way catheter. The flexible end is attached over the Luer lock of a standard blood administration set, attached to a bag of normal saline. Simple bench-top studies using 1 litre of normal saline at a height of 1.8 m, blood administration tubing, catheter valve and a 20-F Simplast Foley 3-way catheter (Teleflex Medical Ltd, CE0124), resting horizontally at a height of 50 cm, have shown an average flow rate of 3.1 ml/s. Identical experiments using a 2 litre normal saline irrigation reservoir at a height of 1.8 m, a single irrigation giving set, and Simplast Foley 3-way catheter at 50 cm, have shown an average flow rate of 3.5 ml/s.

DISCUSSION

Ideally, all hospitals would stock specialist irrigation apparatus, but hospitals without on-site urological services rarely do so. The problem is particularly acute in large conurbations with a number

of hospitals where specialist services are naturally concentrated in one centre. Occasionally, situations arise where transfer of a patient requiring irrigation to a specialist centre is inadvisable. In such circumstances, the system described above may provide an acceptable means of providing temporary irrigation until such time as transfer to urology is considered safe, or specialised irrigation apparatus becomes available.

Use of an improvised sternal retractor for mediastinal parathyroidectomy through a cervical incision

SIONG-SENG LIAU¹, GRANT HILL-CAWTHORNE¹, GORDON C WISHART¹, FRANCIS C WELLS²

¹Dept Endocrine Surgery, Addenbrooke's Hospital, Cambridge, UK

²Dept Cardiothoracic Surgery, Papworth Hospital, Cambridge, UK

CORRESPONDENCE TO

Gordon C Wishart, Department of General Surgery, Box 201, Addenbrooke's Hospital, Hills Road, Cambridge CB2 0QQ, UK
E: gordon.wishart@addenbrookes.nhs.uk

BACKGROUND

Mediastinal parathyroid adenomas are traditionally managed by open chest surgery which has associated morbidities. The advent of pre-operative localisation using a combination of ⁹⁹Tc-sestamibi scintigraphy (Fig. 1A,B) and contrast-enhanced CT scan (Fig. 1C) has allowed accurate localisation and, hence, a focused approach towards mediastinal parathyroidectomy. We describe a technique of performing mediastinal parathyroidectomy through a cervical incision using a sternal retractor.

TECHNIQUE

The supine patient is positioned with the neck extended. A standard collar incision is made between sternocleidomastoid muscles. Subplatysmal flaps are raised. Sternohyoid and sternothyroid muscles are divided low in the neck. A single arm of sternal retractor (Rultract Skyhook, Ohio, USA) is applied to the sternum to lift it upwards (Fig. 2A,B). The ratcheting system of the sternal retractor gently elevates the sternum and locks in place. This manoeuvre allows improved access and visualisation of the anterosuperior mediastinum. The cervical extension of thymus is identified, dissected free and retracted superiorly. The ectopic parathyroid adenoma when identified can be excised from the thymus or resected *en-bloc* with the thymus.

DISCUSSION

This technique avoids the need for sternotomy or thoracotomy in the excision of parathyroid adenoma. Consequently, the postoperative length of hospital stay is short. However, it must be emphasised that this technique only allows adequate exposure of the anterosuperior mediastinum, hence should not be used for ectopic parathyroid adenomas localised to other areas of the