Treating the boxer's fracture in Wales: a postal survey

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ABSTRACT

INTRODUCTION There is no standardised treatment for fifth metacarpal neck fractures. Treatment of this common fracture can vary from immediate mobilisation to immobilisation in a plaster cast for 3 weeks. There is no literature identifying current practice amongst surgeons.

SUBJECTS AND METHODS This survey's aim was to reveal current practice in Wales by means of a postal questionnaire sent to all Welsh orthopaedic consultants.

RESULTS The questionnaire had a 60% response rate. Results demonstrated varied opinion regarding the degree of displacement warranting reduction. Overall, 10% of surgeons reduce the fracture at 30° of displacement, 29% at 40°, 18% at 50° and 20% at 60° of displacement. The treatment was also very varied. Most surgeons preferred to treat these fractures with neighbour strapping (43%), while others preferred plaster immobilisation (39%) or immediate mobilisation (10%). Only 22% of surgeons discharge these patients back to the community after their first visit to out-patients while 13% offer two follow-up appointments.

CONCLUSIONS The treatment being offered for this common fracture in Wales is inconsistent. There is a need to develop evidence-based best practice guidelines which should standardise the treatment of this common injury. Perhaps, a large multi-centre outcome study may enable this to be drawn up in the future.

KEYWORDS

Fifth metacarpal neck fractures – Boxer's fracture – Survey – Hand trauma

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Fifth metacarpal neck fractures (boxer's fracture) represent 20% of all hand fractures.¹ In spite of their frequency, there is little good evidence regarding the management of these fractures. The most common location of this fracture is sub-capital and often results in a further increase in the palmar angulation of the metacarpal head. This can alter the appearance of the fifth knuckle and can lead to cosmetic complaints.²

Controversy in the treatment of this fracture relates first to the indication for reduction and second the optimum conservative management. The general consensus is that, if rotational malformation is present, reduction is indicated. Opinion varies concerning the angle of palmar angulation that is acceptable. The recommended acceptable angle ranges from 25–70° in various studies.^{3–10} However, there is little evidence to suggest increased palmar angulation gives rise to any functional disability long term.

Yet more debate lies with the best conservative management of these fractures. The traditional method of treating this fracture is plaster cast immobilisation of the wrist and metacar-

pophalangeal (MCP) joints in the position of function. This traditional method has been compared with functional casts,⁸ functional taping to the fourth finger,³ a compression glove over the whole hand⁶ and immediate full mobilisation without support.

Of particular note is a Cochrane review, published in 2005,¹¹ looking at various studies comparing methods of conservative treatment of this fracture. It concluded that there was no evidence that any of the conservative treatments were statistically superior. Only five studies matched its inclusion criteria, all of which involved small numbers and none of which recorded validated hand function as a primary outcome measure. The review itself concluded more research was warranted on this topic.¹¹

The aim of this survey was to determine how these fractures are being treated in Wales.

Subjects and Methods

A questionnaire (Appendix 1) was devised to investigate how this fracture was being treated in Wales. Questions

Figure 1 Angle of displacement at which consultants reduce fracture.

were aimed to determine opinion regarding angle of displacement warranting reduction and preferred conservative management, duration of treatment and follow-up. This questionnaire was sent to all consultant orthopaedic surgeons in Wales.

Results

A total of 110 orthopaedic consultants in Wales were sent the questionnaire and 66 (60%) completed questionnaires were returned. Four replies came from consultants no longer treating these fractures and were, therefore, excluded.

Opinion varied concerning angle of displacement warranting reduction; the majority of consultants reduced the fracture at 40–60° (Fig. 1). Seven surgeons when asked this question marked 'other'. Two stated that there was no indication for reduction. One stated only if the fracture was open, another stated only if the patient was a musician, one stated treatment depended on the level of the fracture and one stated that his treatment would be patient-dependent.

Of note, 13 consultants specified their special interest as either upper limb or hand surgery. Again, opinion varied between these consultants and general orthopaedic surgeons regarding the angle of displacement warranting reduction. Hand/upper limb surgeons chose to accept a greater degree of displacement (Fig. 2).

For the general orthopaedic surgeons, treatment varied from neighbour strapping allowing full mobilisation of both MCP and wrist joints (43%) to plaster cast immobilising both the wrist and the MCP joint (39%). Only 10% encouraged full mobilisation immediately. Interestingly, no upper limb surgeon treated the fracture in plaster opting for either taping or full mobilisation (Fig. 3).

Figure 2 Angle of displacement requiring reduction comparing general orthopaedic surgeons to hand/upper limb specialists.

Figure 3 Treatment according to specialist or general orthopaedic surgeon. POP, plaster of Paris.

Patients treated with a plaster cast were treated for 2 weeks (22%), 3 weeks (72%) or 4 weeks (2%). When the patient was treated with neighbour strapping, this was carried on for 2 weeks (51%) or 3 weeks (49%).

Information on follow-up practice was gathered from the questionnaire. Table 1 summarises the data independent of treatment modality. Thirty-seven consultants follow-up patients with one clinic appointment, on average 2.8 weeks (range, 1–6 weeks) following their initial fracture-clinic attendance. Eight consultants follow-up their patients with two clinic appointments the second of which on average

Table 1 The follow-up after fracture clinic appointment of patients with this injury

	Upper limb surgeons	General surgeons	Total
Discharged	5	9	14 (22%)
Discharged to physiotherapy	0	3	3 (5%)
One follow-up	6	31	37 (60%)
Two follow-ups	2	6	8 (13%)

5.25 weeks (range, 3–8 weeks) after their original fracture-clinic attendance. Fourteen consultants do not follow-up these patients after initial fracture clinic attendance. Three patients were discharged to physiotherapy by general orthopaedic surgeons and no patients were discharged to physiotherapy by the upper limb surgeons.

Finally, the study revealed that three of the 66 surgeons who responded to the questionnaire routinely X-rayed the fracture on removal of the plaster cast.

Discussion

The objective of this study was to determine current practice regarding treatment of fifth metacarpal neck fractures in Wales in light of the debate in the available literature. This survey clearly demonstrates that treatment of this fracture is variable in method, duration and follow-up amongst orthopaedic consultants.

The angle of displacement at which surgeons reduce these fractures varies from 30–60°. Statius Muller *et al.*⁸ found that optimal outcome can be achieved by conservative management of fractures with up to 70° of angulation. This is the largest angle that has been documented in the literature to be acceptable in terms of range of movement and pain. It appears from our results that upper limb surgeons are more reluctant to reduce the fracture at smaller angles. None of the consultants were treating these fractures with Kirschner wire fixation or internal fixation.

Optimal conservative treatment modality of this fracture is debated in the literature. This survey has illustrated a lack of consensus of opinion amongst orthopaedic surgeons in Wales as well. Opinions are split between functional taping and immobilisation with plaster of Paris. Plaster of Paris is the traditional method of treating this fracture; however, it has obvious drawbacks including joint stiffness, decreased functionality and the need for follow-up being not only an inconvenience for the patient but perhaps an

unnecessary use of clinical resources. There is evidence that supports all types of immobilisation but, despite this, Poolman's Cochrane review¹⁰ could not reveal any treatment that had a significant advantage over the other. Interestingly, from the upper limb consultants who returned the questionnaire, plaster immobilisation is no longer being implemented; full mobilisation or functional taping being the preferred option.

Again, the length of time that the splinting should be in place is by no means unanimous. In this survey, both functional taping and plaster cast immobilisation are enforced for either 2 or 3 weeks. Evidence is lacking with respect to how long these splints should be applied for.

The majority of patients suffering with this fracture are being followed up with at least one clinic appointment with 13% being routinely offered two follow-ups. Again, the larger percentage of the upper limb surgeons appear to be discharging their patients to the community. Recent evidence appears that, with good education, these patients do not need any follow-up.¹²

Conclusions

In the absence of evidence-based guidelines, the aim of this survey was to determine current practice to establish if there was a general consensus for optimal treatment of this fracture. The survey clearly reveals variable practice within Wales emphasising the need for further research to determine evidence-based guidelines.

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Appendix 1

1. What particular area do you specialise in orthopaedics?

2. At what angle of 5th metacarpal neck displacement would you consider operative management?
More than 30°?
More than 40°?
More than 50°?
More than 60°?
More than 70°?
More than 80°?
More than 90°?
Other _____
3. If you elect to treat the fracture conservatively; what is your treatment of choice?
Splinting with plaster of Paris with immobilisation of both the MCP and wrist joint?
Functional bracing with free movement in both the MCP and wrist joint?
Functional taping with free movement in both the MCP and wrist joint?
Elastic (or compression) bandage with free movement in both the MCP and wrist joint?
Full dynamic treatment, no external support, with free movement in both the MCP and wrist joint?
4. How long do you elect to keep them in this support?
Less than 2 weeks?
3 weeks?
4 weeks?
5 weeks?
6 weeks?
More than 6 weeks?
5. After their initial fracture clinic appointment, do you?
Follow them up in clinic?
Discharge them to the community?
Discharge them to physiotherapy?
6. How many times and what time interval do you follow these patients up after fracture clinic?
One follow-up appointment at ___ weeks
Two follow-up appointments at ___ weeks and ___ months
Three follow-up appointments at ___ weeks and ___ months and ___ months
Four follow-up appointments at ___ weeks and ___ months and ___ months and ___ months
More than four appointments?
7. Do you routinely X-ray the injury during the follow-up period?
Yes?
No?