

Function Forearm Cast : A Technical Note

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Abstract : A method of casting a functional forearm cast is described. The cast allows a certain degrees of elbow motion while it limits axial rotation of the forearm.

INTRODUCTION

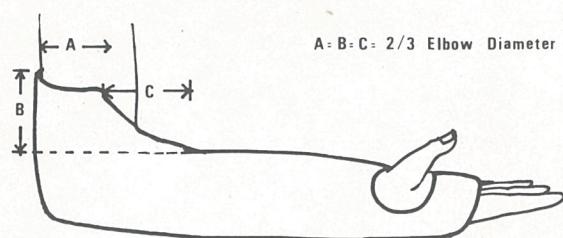
To treat forearm fracture by cast immobilization, a long arm cast is necessary to control the axial rotation of the forearm bones. Besides causing elbow stiffness, prolonged use of the long arm cast limits many daily activities of the patient. This often makes the patient decide to terminate the cast treatment before solid union is achieved. In our poor-compliance patients, this usually causes malunion or delayed union. We have developed independently a modified cast, a functional forearm cast, which is very similar to the Sarmiento forearm brace^{1,2}. We use the functional cast for continuing immobilization during the three-week period that usually start after 3 weeks of long arm cast immobilization. The cast allows an earlier start for the resumption of elbow motion, lessens the discomfort and is more acceptable to the patient as a

method of treatment during the later period of immobilization.

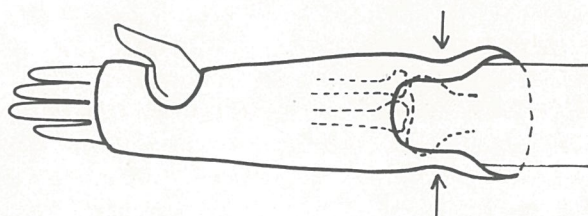
CASTING TECHNIQUE

The elbow is held in 90 degree flexion and the forearm is positioned in desired pronation or supination. The webril is applied over the hand, the forearm and the distal third of the arm. A 10 cm plaster bandage is applied from the hand to the distal part of the arm just above the elbow.

Five layers of 10-15 cm plaster slab are used to reinforce the posterior aspect of the elbow and the lower part of the arm in the supracondylar region (Fig 1 A). Molding the cast, as shown in figure 1B, before it is set is an important part of the procedure to control the axial rotation of the forearm. Finally, the plaster and the webril in the antecubital fossa region is divided and trimmed to allow space for elbow flexion. In children, correspondingly narrow plaster bandages are required, depending on the size of the individual. The cast will allow for elbow motion in a range of 50 to 100 degrees of flexion while limiting the axial rotation of the forearm (Fig 2).



A



B

Fig. 1 A) Diagram shows the functional forearm cast from the lateral view. The cast is applied up to the supracondylar region over the posterior aspect of the elbow joint. This restrict the elbow joint into a flexion attitude.

B) Molding the cast in the supracondylar area is an important part that limit the axial rotation of the forearm.



Fig. 2 The picture show the patient whom the functional forearm cast was applied. The cast allow a certain degree of elbow motion while limiting the axial rotation of the forearm.

DISCUSSION

In developing countries, poor compliance of the patients is one of the major problems in orthopaedic practice, espe-

cially for closed treatment of fractures by cast immobilization. Firstly, we use functional forearm cast as an alternative to continuation to long arm cast treatment for forearm bone fracture among poor-compliant patients. The cast is usually accepted by most of the patients and lessens the problem of self-termination of cast treatment and the problem of elbow stiffness. Secondly, this cast also helps position the forearm in the desired pronation or supination as in the initial cast immobilization for a comminuted fracture of the distal radius³. Finally, for the more stable fracture types such as greenstick fractures in children or non-displaced fracture of the distal third of the forearm bones, we have experienced satisfactory results by using such casts for initial immobilization. The results of using such casts for initial immobilization are that the cast is more easily applied, cheaper and more practical for use than the forearm brace, especially in developing countries.

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REFERENCES

1. Sarmiento A, Pratt GW, Berry NC, Sinclair WF. Colles' fractures; functional bracing in supination. *J Bone Joint Surg (Am)* 1975;57:311-7.
2. Sarmiento A, Zagorski JB, Sinclair WF. Functional bracing of Colles' fracture : a prospective study of immobilization in supination vs. pronation. *Clin Orthop* 1980;146:175-83.
3. Chaikitpinyo S, Mahakkanukrauh C, Mahaisavariya B, Kosuwon W. Fracture distal radius : The appropriate position for cast immobilization. *J Thai Orthop Assoc* 1985;10:137-42.