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The occasional scaphoid cast

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The common cause of a scaphoid fracture is a fall onto the outstretched hand, involving a forced dorsiflexion and radial deviation. A scaphoid fracture is usually treated with a carefully molded, short-arm cast that includes the proximal phalanx of the thumb, worn for 6 to 12 weeks. As is well known to most rural physicians, this fracture is prone to complications, including avascular necrosis, non-union and post-traumatic osteoarthritis.

Step 1

Set aside the materials you'll need (Fig. 1): a) 1 piece of 5-cm Stockinette, b) 1 piece of 2-2.5-cm Stockinette or Surgi-gauze for the thumb, c) 1 roll of 7.5-10-cm Soft-roll, d) 3 rolls of 7.5 cm Gypsona plaster, and e) a pail of lukewarm (20°C-25°C) water.



Fig. 1

Step 2


Fig. 2

Position the patient: elbow flexed to 90°, arm in the neutral position between pronation and supination, fingers and thumb in the "pincer position" — imagine that the patient is holding a glass in his or her hand (Fig. 2). It is easiest to work facing the patient.

Step 3

Apply the Stockinette, (Fig. 3) extending from just below the elbow to a point 4-5 cm distal to the fingertips. Make a slit in the Stockinette for the thumb.


Fig. 3


Fig. 4

Step 4

Apply the Stockinette/Surgi-gauze to the thumb. Let it extend from the base of the thumb to a point 2.5 cm distal to the tip of the thumb (Fig. 4). (Make a small slit at the base, if necessary.)

Step 5

Apply the first roll of Soft-roll, starting at the wrist. Apply 2 turns around the wrist, then 1 turn across the hand (Fig. 5), then another turn around the wrist and thumb. Next, make a small vertical cut in the Soft-roll (Fig. 6), then wrap around the thumb twice (Fig. 7). Work the Soft-roll up toward the elbow, each turn overlapping by half the previous turn (Fig. 8).



Fig. 5



Fig. 6



Fig. 7



Fig. 8

Step 6

You may wish to tear off a small strip of Soft-roll and apply a small circular flange around the elbow for added comfort (Fig. 9).



Fig. 9

Step 7

You are now ready to begin applying the plaster. Dip the first roll of plaster into the water for 3 to 5 seconds until the bubbling has ceased. Remove from the water and squeeze the roll gently twice. Begin the application of plaster by applying 2 turns around the wrist, then go around the thumb twice (Fig. 10), then around the wrist once again, then twice around the "crease" of the hand. Be sure that the MCP joints are well exposed: a common error is to extend the plaster too far distally. Ensure that the IP joint of the thumb, in the flexed "pincer" position, is incorporated into the cast, but leave the tip of the thumb well exposed. Next, carry the plaster up towards the elbow, to a point 5 to 7 cm below the flexed elbow joint, each turn overlapping by half the previous turn (Fig. 11).


Fig. 10


Fig. 11

Step 8

Fold the Stockinette over the plaster at the distal end, making 2 separate folds (Fig. 12), then fold over the proximal Stockinette and the thumb Stockinette/Surgi-gauze (Fig. 13).


Fig. 12


Fig. 13

Step 9

Begin to apply the second roll of plaster at the elbow, spiraling downward toward the wrist, each turn again overlapping the previous turn by 50%, one turn through the "crease" (Fig. 14), then twice around the thumb (Fig. 15).



Fig. 14



Fig. 15

Step 10

Mold the cast carefully, paying special attention to the snuffbox area, then mold the remainder of the cast (Fig. 16).



Fig. 16

Step 11

Begin to apply the third roll of plaster, starting again at the elbow spiraling downward to the "crease" of the hand then again 2 turns around the thumb (Fig. 17). A second common error is to make the cast too thick over the "crease" between the thumb and the fingers. You do not need a lot of strength here.

Step 12

Smooth out the cast well (Fig. 18). Step back and admire.



Fig. 17



Fig. 18

We note that some physicians do not include the interphalangeal joint of the thumb. We feel that this joint should be included, otherwise there may be movement of the cast, creation of friction, then ulceration between the thumb and the index finger.

Encourage the patient to exercise his or her non-immobilized fingers. Inspect the cast every 2 weeks or so; if it is loose, apply a new cast. Normally the cast is removed at 8 weeks. At that time, if the patient has a comfortable wrist, a good range of motion, and is able to grip with little or no local tenderness, the cast may be discarded, regardless of the x-ray appearance. Treat the patient, not the x-ray. Protect the wrist with a splint and prohibit contact sports until there is evidence of union on x-ray. If the patient still has discomfort, tenderness, weakness or pain, reapply a new cast for 4 to 6 more weeks.1

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