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The occasional stovepipe cast

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Stovepipe casts" immobilize the leg with the knee joint in extension. Indications include fractures of the patella with an intact extensor apparatus (6-weeks of casting needed), isolated medial collateral ligament tears (usually the knee is casted in 20° of flexion for 6 weeks) and post-op following patella surgery.

Step 1

Lay out the supplies (Fig. 1).


Fig. 1

- 2 lengths of stockinette (usually size 7.5-cm for women, 10-cm for men), each long enough to reach from the patient's groin to the proximal foot.
- 2 rolls of 15-cm soft-roll padding material
- 4 rolls of 15-cm plaster
- two 2-3 layer 10-cm width plaster slabs, each approximately 37.5 cm long
- bucket of water, 15°-20°C
- scissors.

Step 2

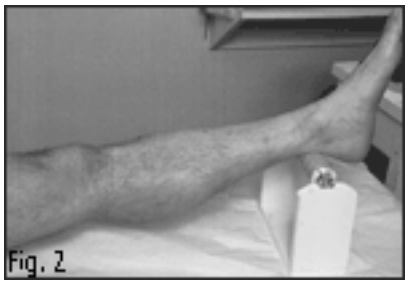
Fig. 2

Position the patient flat on his or her back, with a support under the Achilles tendon (Fig. 2). Some physicians prefer the knee in 180° of extension, while others prefer the knee in a slightly flexed (15°-20°) "anatomical position."

Step 3

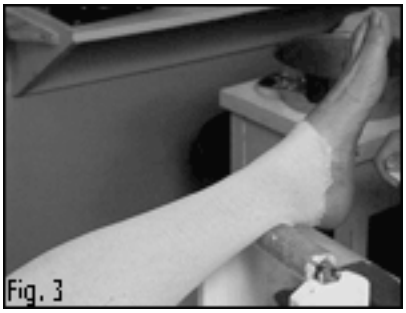
Fig. 3

Apply the first piece of stockinette cut to fit from the groin to below the ankle (Fig. 3), and then apply the second stockinette on top of this, so that there is a double layer of stockinette on the patient, to prevent "shearing."

Step 4

Begin by applying the first roll of soft-roll, starting at a point about 10 cm above the malleoli (Fig. 4). Work upward (Fig. 5), ending at a point 12.5-15 cm below the proximal edge of the stockinette and then work downward again. Each turn should overlap by 50% the previous turn. Begin applying the second roll of soft-roll from where the first roll ends. Be sure that about 15 cm of stockinette is left exposed at each end of the leg (Fig. 6).

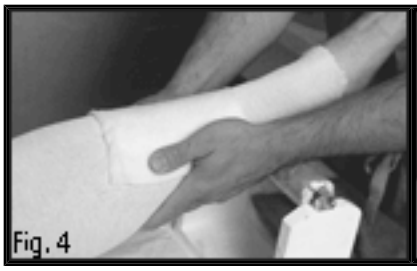
Fig. 4

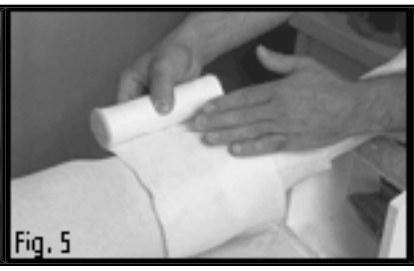
Fig. 5


Fig. 6

Step 5


Fig. 7

For added comfort, make small "flanges" (Fig. 7) at the proximal and distal ends by folding in half transversely a piece of soft-roll that is long enough to encircle the limb. For added comfort, to prevent pressure sores and to compensate for any leg atrophy that might occur, make sure the knee area is well padded, adding 1 or 2 slabs of soft-roll over the knee anteriorly and posteriorly.

Step 6

You are now ready to apply the plaster. Soak the first roll for 3 to 5 seconds in the bucket of water and then squeeze it gently to allow excess water to drain. Start applying plaster at the ankle end, just above the flange (Fig. 8) and then work upward, each turn overlapping by 50% the previous turn, and ending just below the flange at the groin end. Apply the second roll of plaster, beginning at the point where the first roll ended.

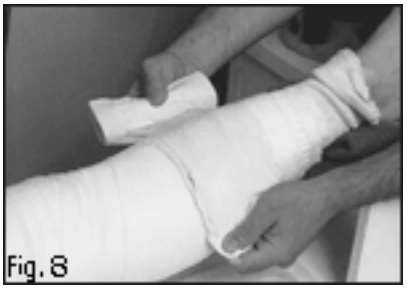
Fig. 8

Step 7

Apply anterior and posterior slabs over the knee (Fig. 9), being careful not to allow the leg to slip into hyperextension. The exposed stockinette at the proximal and distal ends is then turned up over the plaster (Fig. 10, Fig. 11).

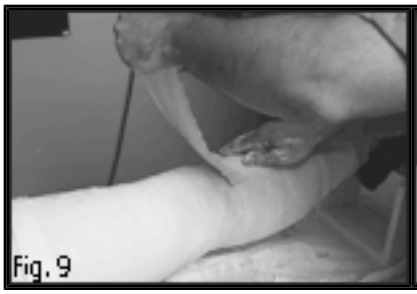
Fig. 9

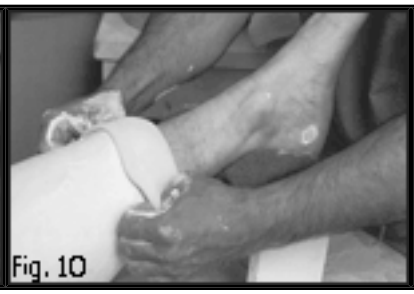
Fig. 10

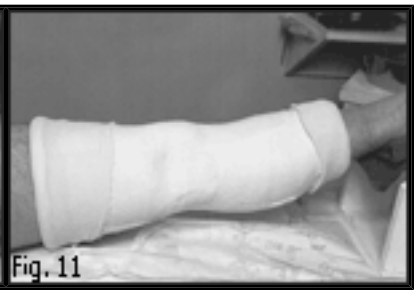
Fig. 11

Step 8

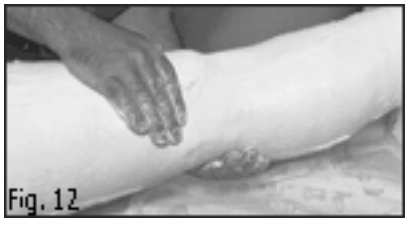
Fig. 12

Mold the cast carefully with your hands (Fig. 12), giving special attention to the areas around the condyles. Support the knee joint with your hand to prevent it going into hyper-extension. Be careful not to push the patella upward or downward out of position!

Step 9

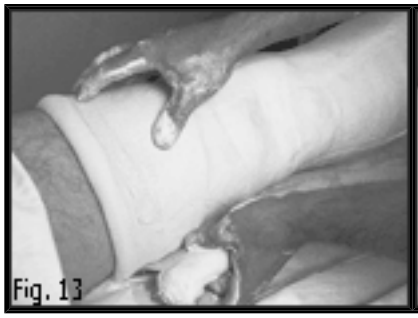
Fig. 13

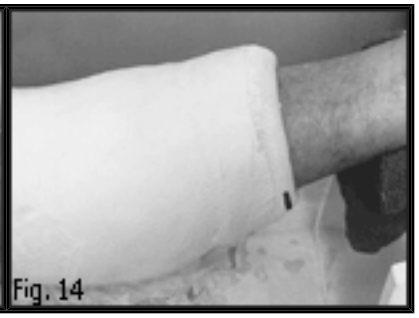
Fig. 14

Begin applying the third roll of plaster, starting at the groin end and working downward (Fig. 13). Continue with the 4th roll of plaster, again starting at the point where the third roll has ended. (Use of a 4th roll depends on the size of the patient. It is not always necessary in smaller patients.) Cover at least half of the stockinette (Fig. 14) at the upper and lower ends. Finally, smooth the cast.

Step 10

Depending on the exact nature of the bone or ligament injury, the patient may begin weight-bearing immediately, or after the appropriate interval.

This article has been peer reviewed.

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