



## A NOVEL TECHNIQUE FOR POST IMPLANT DIFFICULT SKIN CLOSURE

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**ABSTRACT** The management of grossly displaced fractures sometimes needs immediate reduction to relieve pressure on neurovascular structures and simultaneous stabilization with plates & screws. Surgeons frequently encounter difficulty in the final stage of surgery which is skin closure due to significant swelling. Delayed secondary closure increases the risk of exposing the fracture site & implant to infection. Also counselling relatives postop for second surgery and for additional expenditure is difficult. Here we present our experience of managing difficult closures using multiple tension relieving small skin incisions to relieve compartmental pressure and catastrophic wound complications. Here we have shown an example of difficult closure on a complex displaced distal radius fracture post fixation.

**KEYWORDS :** Compartment pressure, Skin closure, flap, Delayed skin closure, Secondary closure

**INTRODUCTION**

Skin closure is the last but crucial step in any surgery. Closing the skin with tension leads to vicious increase in the compartment pressure and sequelae like compartment syndrome, carpal tunnel syndrome and wound dehiscence(1-4). Hence it is vital to close the operated site without tension.

In the presence of significant swelling primary skin closure is not possible and primary reconstructive procedure. or delayed wound coverage procedure is needed<sup>1</sup> like skin graft, flap coverage and newer modalities like skin substitutes(5,6).

However Native skin provides the best cover in terms of 1. functional and aesthetic results 2. avoiding second surgery and anaesthesia 3. avoiding high bill to the hospital or the patient 4. patient acceptance.

The blood supply of the skin flaps is based on the subdermal plexus(7-9). We have done a series of complex distal radius fracture plating requiring tension relieving multiple small skin incisions after skin closure.

**CASE REPORT**

54 year old male patient sustained fracture distal radius following a road traffic accident, Radiological evaluation revealed AO Classification 2R3C3 type fracture. At the time of presentation he had significant swelling of his hand and forearm with carpal tunnel syndrome.

He underwent immediate carpal tunnel decompression, open reduction and internal fixation using combined carpal tunnel incision and FCR approach. Skin closure was very tight with 2-0 Nylon. Multiple small incisions were made on the ulnar side of incision, because the FCR approach goes between the radial artery & the flexor carpi radialis tendon. until the skin became supple and yielding.

Wound was covered with soft dressing and dorsal splint was applied. Hand elevation was advised to continue for 3 weeks post-op. Wound was reviewed on 1<sup>st</sup> three post op days and patient was discharged home.

**BIOGEOMETRY OF SKIN INCISIONS**

Skin closure is done with 2-0 nylon. Parallel skin incisions are made on either side of surgical incision. Incisions are 2 cm long (Fig1-3). The depth of the incisions is superficial to the fascia.

Odd rows started 1 cm away from surgical scar and even rows started 2 cm away from surgical scar. Odd and even rows are overlapped by few millimeters to avoid skin tension between rows. Parallel skin incisions are continued until the skin around the suture line is supple and resting skin tension lines re-appear.

The incisions are left to heal by secondary intention. The wounds heal with no functional impairment and good aesthetic appearance. The wounds healed well within 10 days and develop (Fig4,5 - taken at 5 days post-op & 1 week post-op).



**Fig 1-3**(left to right): 1-Post implant fixation bulging muscle at incision site with edema of skin. 2- After skin closure, shiny tense skin. 3-after multiple linear incisions, suture line becomes supple



**Fig 4-5** (left to right): 4-at 5 days post-op incisions healing & suture line healthy. 5- 7 days post-op suture line healthy & incisions healed with good neo-epithelialization

**CONCLUSIONS**

There are many ways to cover soft tissue defects, as evidenced by the reconstructive ladder(10,11).

However, immediate cover & native skin give the best results

functionally & aesthetically. There are various methods to close skin, frequently used ones include pronating the forearm to bring the wound edges closer(12), however this method does not relieve pressure. Another method described by Berman(13) uses silastic vessel loop to close wounds gradually, though this relieves pressure & facilitates wound closure, it exposes the implant to the risk of infection. Here we have proposed a simple, effective method of skin closure following stabilization of fracture in a fracture of the distal radius using plate & screw. The wounds heal well and it does not need revision surgery for wound closure, it relieves pressure & provides a stable & durable skin cover at the time of primary intervention

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