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STURDY SURGICAL MODALITIES FOR SOLACING PRESSURE SORES

General Surgery

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ABSTRACT

Introduction: Hidden or forgotten enemy is more dangerous than the visible one. Pressure ulcers have been recognized as a disease entity since ages. It is unrealistic in vulnerable patients to prevent pressure sores indefinitely as it is impossible to deliver perfect nursing care 24/7/365. Breakdowns are inevitable. A lot has been done to understand the disease process. In this study we have suggested our experience of surgical approach to complex pressure sores. The management of these ulcers is ever evolving but the age old saying of "prevention is better than cure" suits this condition the most.

Materials and Methods: This case series is intended to present the results of various management protocols in 30 cases of Decubitus sore to review the outcome and recommendation for future use. A total of 30 patients were included in this study. Out of them 22 patients were female and 08 patients were male. 16 patients had Grade III and Grade IV pressure ulcers that were managed using various flap techniques including inferiorly based gluteal rotational flap, tensor fascia lata flap, limberg's flap and double rotational flap and the rest 14 patients had Grade I and II ulcers were managed conservatively on outpatient basis.

Results: Triple antibiotic combined with radical debridement and daily & dressings followed by flap cover is the mainstay of treatment. There have been many advances in management of pressure sores including use of vacuum assisted closure. Myocutaneous flaps gives promising results in complex Grade III & Grade IV complex sores. The flap survival rate was found to be 68% with good postoperative care which included frequent position change and usage of alpha mattresses. At the follow up visit, 25% of patients presented with superficial flap necrosis and recurrence in the form of low grade pressure sores however most of the patients reported high levels of satisfaction.

Conclusion: Myocutaneous flap is a very safe and reliable single stage procedure for the repair of decubitus ulcers. No split skin grafting is needed. Important measures to prevent flap necrosis and recurrence good post operative care is required. The patients in this study have attended to a high level of satisfaction in regards to esthetics and the outcome and hence we have concluded that myocutaneous flap is a superior choice in complex pressure sores management. Hence Effectiveness of myocutaneous flap for Pressure sore reconstruction is established and it is recommended for its use in future for complex pressure wounds.

KEYWORDS

Decubitus ulcer, Gluteal rotational flap, tensor fascia lata flap, limberg's flap, double rotational flap.

Introduction:

Hidden or forgotten enemy is more dangerous than the visible one. Pressure ulcers have been recognized as a disease entity since ages. Pressure sores have been found in Egyptian mummies, some of which are more than 5,000 years old.[1] It is unrealistic in vulnerable patients to prevent pressure sores indefinitely as it is impossible to deliver perfect nursing care 24/7/365.[2] Breakdowns are inevitable and should be expected, and the goal should be to minimize the damage. A lot has been done to understand the disease process. This disease is here to stay. In the process of managing these ulcers the basic pathology needs to be understood well. Pressure ischemia is the main reason behind the occurrence of ulceration.[3,4]There are four stages in the pressure sore formation.[5]

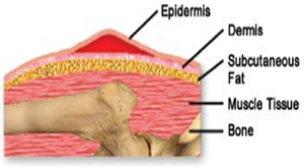


Fig 1: Stage 1 Pressure Sore

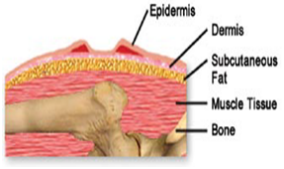


Fig 2: Stage 2 Pressure Sore

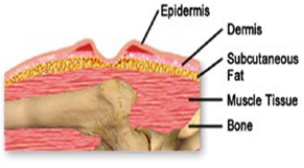


Fig 3: Stage 3 Pressure Sore

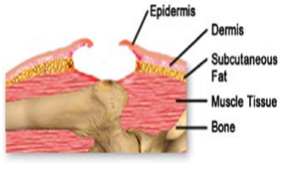


Fig 4: Stage 4 Pressure Sore

Different extrinsic and intrinsic factors have been described with a large number of risk factors causing ulceration.[6]

Extrinsic Factors-

1. Excessive uniaxial pressure
2. Friction and shear forces
3. Impact Injury
4. Heat
5. Moisture
6. Posture

Intrinsic Factors

1. Immobility
2. Sensory loss
3. Age
4. Disease
5. Body type
6. Poor Nutrition
7. Infection

Incontinence has dual factor both intrinsic and extrinsic[7]

The management of these ulcers is ever evolving but the age old saying of "prevention is better than cure" suits this condition the most. [8]

Aim of study: The aim of this retrospective study is to analyze the effectiveness of Myocutaneous flap closure of Pressure sores in a Tertiary Care Hospital which is a multidisciplinary 600 bedded multispecialty public hospital in Delhi NCR.

Objectives

The objectives of the study were :

(a) Effectiveness of Myocutaneous flap for complex pressure sore reconstruction
(b) To suggest its use in future robust reconstruction of Pressure sores.

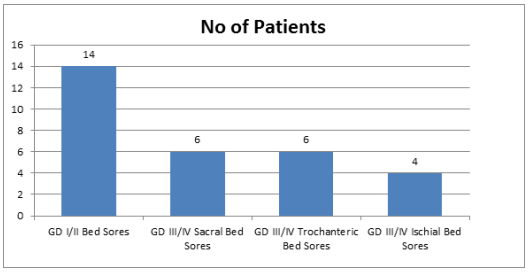
Exclusion criteria :

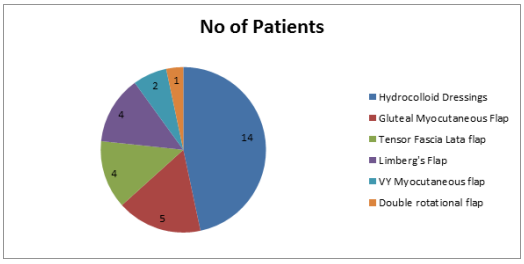
(a) Age group (< 20 years and > 60 years)
(b) Patients with co-morbidities including Diabetes, Malignancy & with immunocompromised states.

MATERIAL & METHODS

This was a retrospective cross-sectional study of Myocutaneous flap for pressure sore reconstruction. A total of 30 patients were included in

this study. 22 patients were male and 08 patients were female. Among them 14 patients had Grade I and Grade II pressure sores which were managed using hydrocolloid dressings, skin care and pressure devices on outpatient basis. The support surfaces and devices are categorized as constant low-pressure (CLP) devices and alternating pressure (AP) devices. CLP devices share out pressure over a large area to diminish the focal impact of pressure at specific anatomic point. These include static air, water, gel, silicone, bead and foam supports. AP devices fluctuate the pressure under the patient to circumvent prolonged pressure at a specific area.[9]16 patients had Grade III and Grade IV complex pressure sores. The patient's ages ranged from 20 to 60 years. All these cases were managed by Wide surgical debridement of all infected tissues and a wound swab was sent for culture and sensitivity. Twice daily povidone iodine based wound dressing was done followed by saline soaked gauze application, subsequently 3 to 4 settings of vacuum assisted closure dressings were applied. All patients received intravenous broad-spectrum antibiotics which was subsequently changed based on the sensitivity results. Surgical planning was deferred until the wound was clinically clean and the repeated wound swab did not show any bacterial growth. 05 cases of sacral pressure sores were managed with inferiorly based gluteal myocutaneous flap which is based on inferior gluteal artery from anterior division of internal iliac artery and innervated by the sciatic nerve.[10] 01 case of sacral wound was managed using double rotational flap. 04 cases of trochanteric pressure sores were managed using tensor fascia lata flap based on lateral circumflex femoral artery innervated by the descending branch of the superior gluteal nerve.[11] 02 cases of trochanteric pressure sores were managed using VY myocutaneous flap. 04 cases of pressure sores over ischial prominence were managed using limberg's flap based on lateral sacral and superior gluteal arteries from the posterior division of internal iliac artery innervated by the superior gluteal nerve. [12]





a) Inferiorly based Gluteal Myocutaneous flap[10]: Draw the flap before making any incisions which allows to make corrections. Construct the flap larger than we think we will need to ensure a tension-free closure. Design the flap so that it extends in a curvilinear fashion superiorly a few cms and laterally from the wound. It should have a wide base at least 8–10 cm. Separate the flap from the underlying tissues and transfer it into the wound. Undermine the surrounding skin edges as needed to allow the flap to be sutured in place without tension. If necessary, a small back cut can be made at the lateral edge of the base of the flap to help it turn into the wound. Do not narrow the base by more than 1–2 cm.

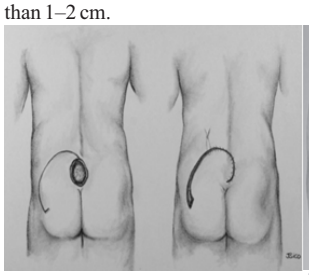


Fig 5: Pre operative marking and incision

Fig 6: Vascular supply to gluteal myocutaneous flap

Fig 7: Pressure sore at presentation

Fig 8: Wound after debridement

Fig 9: Preoperative marking

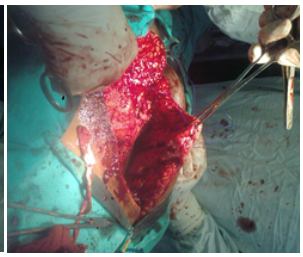


Fig 10: Raising the gluteal myocutaneous flap

Fig 11: Post surgery

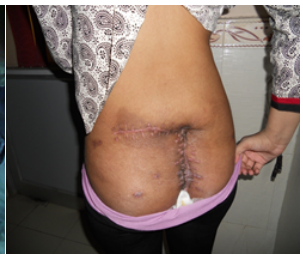


Fig 12: Review after 04 weeks

b) Tensor Fascia Lata Flap[11]: Draw the flap before making any incisions. The anterior border of the flap is a line drawn from the anterior superior iliac spine to the lateral margin of the kneecap. The posterior border is about 5 cm posterior to the anterior border (Fig 16). Elevate the flap off the underlying tissues. You will see an obvious separation between the undersurface of the TFL fascia and the deeper tissues. It is useful to place a suture in the distal most part of the flap to connect the fascia to the skin so that you do not accidentally separate the skin/subcutaneous tissue from the TFL fascia during dissection (Fig 18). The flap is moved into the wound defect and loosely sutured in position (Fig 19). Place a few dermal sutures, and then do an interrupted skin closure. The skin closure should not be tight. It is better to have little gaps in the closure, which will heal, than to do a tight closure and lose part of the flap. The donor site is closed primarily with dermal sutures and interrupted as well as the site of the pressure sore.

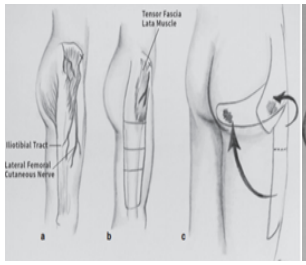


Fig 13: Tensor Fascia Lata Flap-Nerve Supply

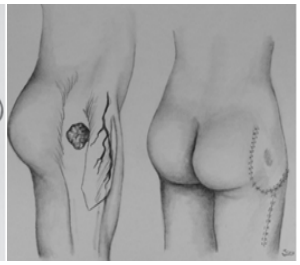


Fig 14: Tensor Fascia Lata Flap-Vascular supply

Fig 15: Pressure sore at presentation

Fig 16: Preoperative marking


Fig 17: Outline of the flap


Fig 18: Raising the flap


Fig 19: Flap moved to wound defect

c) VY Myocutaneous flap[13] : V-Y myocutaneous advancement flaps have facilitated tension-free skin closure, while providing high volume, well-vascularized and sensate skin with minimal morbidity. Mark the incision pre-operatively, skin, fascia, and subcutaneous tissue can be harvested from the medial thigh and inferior gluteal area, triangular flap is created (Fig 21). The length of base of triangle is equal to diameter of wound. Flap is advanced in a V-Y fashion with blood supply from perforator vessels (Fig 22)

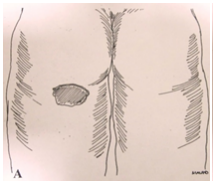


Fig 20: Ischial pressure sore

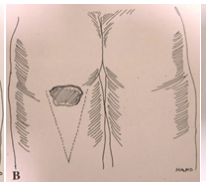


Fig 21: Preoperative marking

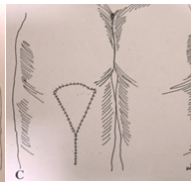


Fig 22: Post flap closure


Fig 23: Intra operative


Fig 24: Post Surgery

d) Limberg's flap[14]: Limberg's flap is traditional in field of surgery, hence does not require detailed explanation here. Preoperative marking is done to include all the diseased area, inside the rhomboid area and is excised (Fig 26) Flap is raised by extending the incision laterally, and mobilized to cover the defect, skin is closed without tension by interrupted sutures (Fig 27).


Fig 25: Pressure sore at presentation


Fig 26: Preoperative marking


Fig 27: Limbergs flap (*parallelogram*)


Fig 28: Post flap closure

e) Double rotational flap[15]: Double rotational flap are commonly employed for defects that are very large to close with a single rotational flap. Typically, these flaps are used on the scalp or around free margins. These margins produce a combination of both advancement and rotation which can make categorization confusing.


Fig 29: Sacral pressure sore


Fig 30: Raising double flaps


Fig 31: Post flap closure


Fig 32: Wound dehiscence

RESULTS:

Triple antibiotic combined with radical debridement and daily & dressings followed by flap cover is the mainstay of treatment. There have been many advances in management of pressure sores including use of vacuum assisted closure.[16] Myocutaneous flaps gives promising results. The flap survival rate was found to be 68% with good postoperative care which included frequent position change and usage of alpha mattresses. [17]At the follow up visit, 25% of patients presented with superficial flap necrosis and recurrence in the form of low grade pressure sores however most of the patients reported high levels of satisfaction. In our study, out of 16 patients, hematoma and seroma formation leading to dehiscence was seen in only one case. Postoperative minor flap necrosis was seen in two patients. Two patients reported with recurrence attributed to no follow-up, poor general health of the patients and the poor quality of aftercare. In our study, excellent to good results were observed in 11 cases (68%).

DISCUSSION

Management of pressure sores has been a perplexing problem. With conservative treatment, the bed occupancy time is greatly increased, thus leading to overall social and economic loss.[18] Davis, in 1938, is credited with the first suggestion that pedicle flaps should be used for the management of pressure sores. He used the flaps to resurface areas of scar epithelium, leading to the concept that padded, well-vascularized tissue is needed.[19] The first report of excision and closure of decubitus ulcers occurred in 1945 by Lamon and Alexander.[20] The concept of myocutaneous flaps for these was introduced by Ger, who later in 1976 described the use of the gluteus maximus, rectus femoris and sartorius muscles for the treatment of sacral, ischial and trochanteric sores.[21] In our study careful dissection, complete hemostasis and the use of two negative suction drains in each flap for about 2 - 3 weeks helped in reducing the complications incidence of postoperative infection, and of wound dehiscence due to hematoma or seroma formation.[22] In our study, hematoma and seroma formation leading to dehiscence was seen in only one case. Postoperative minor flap necrosis was seen in two patients. Two patients reported with recurrence attributed to no follow-up, poor general health of the patients and the poor quality of aftercare. In our study, excellent to good results were observed in 11 cases (68%).

Two large retrospective studies by Keys et al.[23] and Bamba et al.[24] noted overall complication rates of 73% and 58.7%, respectively. In another study by Bao Ngoc N Tran et al[25] there was an overall complication rate of 25% at 30-day follow up . The advantage of the myocutaneous flap is that it provides good soft tissue padding with thick muscle. There is no need for a split thickness skin graft. The surgical treatment of pressure ulcers by a myocutaneous flap helped in improving the general condition of the patient. The rehabilitation of the bed bound patients could be started early, and the bed occupancy was reduced as was evidenced by the short postoperative stay of the patient in hospital.

CONCLUSION:

Myocutaneous flap is a very safe and reliable single stage procedure for the repair of decubitus ulcers. No split skin grafting is needed. Important measures to prevent flap necrosis and recurrence are a good wound debridement with application of VAC dressing whenever necessary and the use of two negative suction drains. Continued proper measures to prevent any recurrence of pressure sores are absolutely essential. The patients in this study have attested to a high level of satisfaction in regards to esthetics and the outcome and hence we have concluded that myocutaneous flap is a superior choice in Pressure sores management. Hence Effectiveness of myocutaneous flap for Pressure sore reconstruction is established and it is recommended for its use in future.

Source of Support: Nil
Conflict of Interest: None

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