Management of Traumatic Wound With Debridement And Skin Grafting - A Case Study

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Abstract:

Acharya Sushruta made important contribution in the field of surgery. He is known as father of plastic surgery. Skin graft is one of the most important technique in plastic surgery and dermatology. Skin grafts are used in a variety of clinical situations, such as traumatic wounds, defects after oncologic resection, burn reconstruction, release of scar contracture, vitiligo and nipple-areola reconstruction. Conditions with deep spaces and exposed bones normally require the use of skin flaps or muscle flaps. In the present case we have performed debridement and skin grafting in management of traumatic wound.

Key Words: Wound, Debridement and Skin Grafting.

Introduction:

Shalyatrantra is one of the important branch of Ayurveda. Acharya Sushruta made important contribution in the field of surgery. He is well known as father of plastic surgery.[(1)]

Acharya Sushruta described about karna nasa osth sandhan in detail in Sushrut sutra stan adhyayay 16. Acharya explained plastic surgery of ear lobule, in which he explained 10 karna sandhan sadhya vidhi.[(1)]

e.g. if patient is not having ear lobule then acharya explained that mansa from gundpradesh can be grafted as ear lobule

Acharya explained that if thereis bhedan of nasika then with the help of kapol gat twak grafting can be done at nasika and graft is sutured. According toAcharya, same procedure can be applied for oshtha sandhan.[(1)]

The plastic surgery of 19th century was stimulated by the example on Indian methods.

Today also we follow Acharya Sushruta's prin-ciple of plastic surgery.

Wound[(2,3,4)]

It is break in the integrity of skin or tissue often, which may be associated with disruption of structure and function.

Types of wound healing

Primary:- It occurs in a clean incised wound or surgical wound. Wound edges are approximated with sutures. There is more epithelial regeneration than fibrosis.

Secondary:- It occurs in a wound with extensive soft tissue loss like in major trauma, burns, and wound with sepsis. It heals slowly with fibrosis. It leads into a wide scar, often hypertrophied and contacted. It may lead to disability.

Re-epithelialisation occurs from reaming dermal elements or wound margins by sutures or covered using skin grafting.

Healing by third intension (tertiary wound healing or delayed primary closure):- After wound debridement, wound is closed with sutures or covered using skin graft.

Wound Debridement: Total excision of devitalised tissues until healthy, bleeding vascular, tidy wound is created. it is done at regular inter-val as staged procedures.

Skingrafting,[(4,5,6,7)]

It is transfer of skin from one area (donor area) to the required defective area (recipient area). It is autograft.

Graft:-It is transfer of tissue from one area to other without its blood supply or nerve supply.

Types of Grafts according to donor

1. Autograft:-It is tissue transferred from one location to another on the same patient.
2. Isograft:-It is tissue transfer between two genetically identical individual that is be-tween two identical twins.
3. Allograft :- It is tissue transfer between two genetically different members. Example, kidney transplantation (human to human) homograft.
4. Xenograft :- It is tissue transfer from a do-nor of one species to a recipient of another species (heterograft).

Types according to thickness

1. **1. Partial Thickness (split thickness skin graft SSG)**

   -Also called as Thiersch graft, is removal of full epidermis from the donor area

   -It may be – i. Thin SSG. ii. Intermediate SSG. iii. Thick SSG

Stages of Graft Intake

1. **Stage of plasmatic Imbibition**. Thin, uni-form, layer of plasma forms between recipi-ent bed and graft.

2. **Stage of Inosculation**: Linking of host and graft which is temporary.
3. **Stage of Neovascularisation**. New capillar-ies proliferate into graft from the recipient bed which attains circulation later.

Note: Graft is stored at low temperature of 4°C for not more than 21 days.

2. Full Thickness Graft (Wolfe Graft)

It includes both epidermis + full dermis.

It is used over the face, eyelid, hands, fingers and over the joints. It is removed using scalpel blade. Underlying fat should be cleared off properly. Deeper raw donor area is closed by primary suturing. If large area of graft is taken, then that donor area has to be covered with SSG which is a disadvantage in full thickness graft.

Other Grafts

- Composite graft which includes skin + fat + other tissues like cartilage.
- Tendon graft; Bone graft; Nerve graft; Ve-nous graft; Corneal graft.
- Combined graft (allograft + autograft).
- Reverdin graft (Jacques-Louis Reverdin, Swiss surgeon): It is a pinch graft taken from the skin and seeded in to the needed raw area.

Case study

A 35 years old male patient came to OPD with traumatic wound on anteromedial aspect of left legwith history of fall in industry while work-ing. Patient came in OPD with mild swelling at anteromedial aspect of left lower leg.

Type of study- Observational single case study without Control group.

Study Centre- Ayurved Rugnalaya & Sterling Multispeciality Hospital attached to College of Ayurved & Research center, Nigdi Pune.

Study details

Age-35 yrs

Occupation- company worker

Gender- Male **Religion**- Hindu **Diet**- Non-Veg

Chief complaints- Pain, tenderness and swell-ing on anteromedial aspect of left lower leg.

Brief history- A patient underwent industrial trauma while working in company4 months ago then patient noticed a small traumatic wound on his anteromedial aspect of left lower leg size of wound is increasing day by day.

Patient received conservative treatment but did not get relief then decided to undergo surgery.

On examination- No other systemic disorder found

Family history- Not Significant

Local examinations

Wound:-Hypergranulation++

Site-Anteromedial aspect of left lower leg

Size- 15x7cm

Shape-Oval

Tenderness- +

Local Temp-Normal

Skin above the wound - blackish

Lab reports

Hb-12.6 gm/dl **WBC**-10600/cmm

RBC-3.41mil/cmm **PLT**-261000/cmm

BT- 2Min3OSec**CT-** 7Min 2O Sec

PT-16 sec**INR**-1.35 sec

SrCreat-1.0 mg/dl**Urea-**17**BSL (R):** - 84mg/dl

HBSAG: - Negative**HIV I, II: -** Negative

HCV: - Negative

X-Ray (left leg)-No bony abnormality seen.

USG (left leg)- No fluid collection in the soft tissues and underlying muscles show normal appearance.

Materials And Methods:

After Investigations patient shifted to OT, spinal anaesthesia given, primary wash given to bilat-eral lower limb. Painting and draping done, de-bridement done till active bleeding and healthy tissue is seen. All unhealthy tissue and margin of traumatic wound excised.

Using Humby's knife graft is taken from right thigh. NS wash given to graft and windows made on graft.

After cleaning of debrided wound graft is placed on it.Pressure bandage applied and dress-ing done. Donor site dressing done with bacti-grass and pressure bandage applied.

Donor area is dressed and dressing is opened after 10 days, not earlier.

Patient received IV antibiotic Postoperatively anti-inflammatory for 5 days. Then shifted on oral antibiotics.

Dressing opened on 4th day,It is observed that graft was well accepted. Then cleaning with NS done and dressing applied.

Management and Outcome -

Debridement of traumatic wound done, up to healthyvascular tissue is seen. Donor site is se-lected for skin grafting that is right thigh and graft is placed on traumatic wound (recipient site). Cleaning and dressing done, roller ban-dage applied on donor site and pressure bandage applied to recipient site.

Conclusion:

This case shows major traumatic wound can be treated with debridement and skin grafting.

Source of Support: Nil

Conflict of Interest: Nil

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Figure No. 1 : Preoperative traumatic wound

Figure No. 2 : Skin graft

Figure No. 3 : 1st dressing of patient

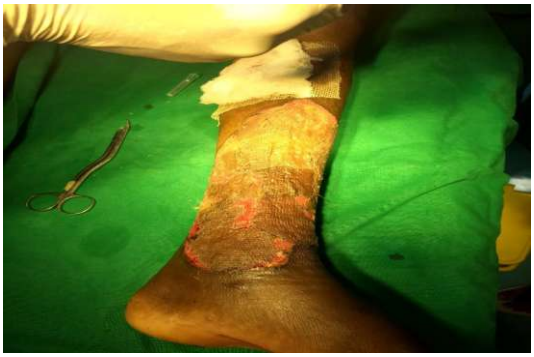

Figure No. 4 : Donor site