

RECONSTRUCTIVE RUN FOR LIFE : A CASE REPORT

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Abstract

Southeast part of the country resides more than 35 million people and Chattogram Medical College Hospital is the center hub for trauma management of this region. Trauma includes industrial injury as well as road traffic accident along with electric burn. Plastic Surgery department deals with this trauma patient for soft tissue coverage. The study shown four electric burn and one cancer patients having flap surgery for their wound coverage. In this study patients selected randomly over a period of one year. Wound at different part of body including head, neck, palm, hand, axilla and heel. We gave five different flaps to cover trauma and cancer defect. Wounds like various trauma including electric burns, cancer and snake bite. Snake bites are common in this hilly terrain. Cancer like SCC and malignant melanoma is also common in the long marine shore of Bay of Bengal. Flap maintain form and function of affected part which improves quality of life. Most of patients are young teenage, only two are elderly. About six months follow up flapsshow, are in good functional and cosmetic outcome with no residual morbidity. All patients undergonea rehabilitation procedure to normal life.

Key words

Soft tissue coverage; Snake bites; Hilly terrain; Cosmetic; SCC.

Introduction

Injuries of different varieties at different part of body should be managed cautiously by varies flap of different kind. Planning is very important for a soft tissue coverage. Functional outcome and cosmetic appearance of that part is another factor to consider before operation.

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By applying a precise knowledge of the anatomy of skin, muscle, bone and fascia in planning reconstructive procedure, the surgeons have the ability to restore form and function in congenital and acquired defects in most topographic regions¹.

Injuries and cancer sometime expose different important part of body which need immediate coverage. Otherwise this expose structures may sustain severe damage due to lack of vascularity. So soft tissue coverage, form and function are three important factors in determining a successful operative outcome².

This case study actually done at Burn and Plastic Department, Chittagong Medical College Hospital (CMCH) for last 12 months from January.2017 to January 2018. Patients randomly selected from ward mainly trauma patients including electric burn, vehicle accident, cancer and lastly snake bite. Flap surgery done in all patients as a part of routine wound management. Every patient was counselling about their surgical options and post operative outcome and then consent taken precisely from everyone of this study. Most of the patients are teenagers, only two elderly and middle age worker. All flaps are healthy and viable. No morbidity seen at donor defect. At 6 months follow up every patient has good function and cosmetic outcome with excellent coverage of soft tissue defect.

Case Report 1

Master 'A' 12 years' kid, from Shitakundu about 30 km north of Chattogram city sustain a critical injury at neck and scalp with high voltage electric burn almost uncounsus while admitted in this department.



Fig 1 : Expose larynx after electric injury.

He was immediately resuscitated and managed and gradually improved physical condition. After several days we debride his necrotic slough in front of neck. Total thyroid cartilage and part of larynges was expose. So we plan for a fasciocutaneous local flap to cover the expose organ.



Fig 2 : Mapping of DP flap.

Though deltopectoral flap a little bit away from wound we choose this one for thin soft pliable tissue in front of neck give good functional and cosmetic outcome. In this case we also can managed to close donor defect primarily without skin graft.

This flap coverage gave good vascular supply to prevent infection and also improved healing. Coverage over larynges also prevent aero-cutaneous fistula which very dangerous for maintaining proper respiratory function.



Fig 3 : Coverage of flap.

Patients has good functional outcome when he was discharged from hospital. Having no residual injury defect. He come every 2 months' interval for follow up. He didn't develop any contracture after flap coverage.



Fig 4 : Follow up at 2 weeks.

He continued his study without any problem at his daily life. He maintains foreword backward bending and later rotation of neck without any difficulty. He never ever has any respiratory problem after DP flap coverage.

Case Report 2

Ms. 'S' 17 years' girl admitted in this department after having an electric injury at right thenar region, while she repaired a circuit for family use. We examine her thenar region two days after initial injury. We found her flexor pollicis brevis muscle and adductor pollicis muscle was exposed due to electric burn. There were multiple options to cover the wound. But if we give skin graft it contracts both thumb and first web space. So we gave First Dorsal Metacarpal Artery flap (FDMA) which main artery is a branch of dorsal vascular arcade. We harvest the FDMA flap and tunneled to reach the wound and covered the thenar eminence.



Fig 5 : Electric injury at thenar space.

Donor defect at base of index finger covered with full thickness skin graft to prevent scar and also contracture afterwards. This flap shows some sensation effects after three months of operation as it includes cutaneous digital nerve along with flaps.



Fig 6 : FDMA flap harvest.

She was quite alright while released from hospital. Her thumb function is completely normal at the time of discharged and after wards at follow up.



Fig 7 : Flap coverage over wound.

Her wound cosmetic appearance was good as well as functional status of hands.



Fig 8 : Follow up after 2 weeks.

We advice continuous physiotherapy to maintain thumb function which improve quality of hand function

Case Report 3

Master 'M' a 15 years old student from Ukhiya, Cox's Bazar, 27 km away from city sustained massive electric burn while contact with high voltage electric wire. His left upper arm severely damaged and also injured different parts of the body. He was taken at Cox's Bazar Hospital. Then referred to this department after wards.



Fig 9 : Amputation stump expose humerous and mapping of LD flap.

Initially we managed his primary injury with resuscitation fluid. His left arm had direct contact with electric wire.



Fig 10 : LD muscle with an island of skin.

at left arm and left axilla. We tried to salvage his limb but unfortunately we failed to save his limb. His burn injury sustains and show progressive tissue loss at upper arm and axilla. Finally, his left upper humerous was totally exposed and developed a large hole at axilla. Deep wound is difficult to deal because it amenable to topical agent³.



Fig 11 : Muscle inset at axilla with skin island at center.

His axillary neurovascular structure was clearly visible after debridement and show pulsatility of vascular structure which was nearly to rupture.

so we decide to give a large, profound muscle flap to cover not only the axilla but also cover the upper humerus. Muscle circulation is based on specific pedicles that enter muscle between origin and insertion, consist of artery and venae comitantes⁴.



Fig 12 : Flap coverage and refashioning of stump.

It gives the whole stump a good cosmetic look. We also took skin island along with latissimus dorsi muscle which cover anterior axilla to prevent contraction.



Fig 13 : Follow up at one month.

The young yester looks good when he was discharged from hospital with good covering of amputation stump of left arm. Donor defect primarily closed at back having no residual deformity. In follow up patient has good functional and cosmetic outcome. He moves his shoulder joint perfectly. No contraction at axilla. No residual infection and discharging sinus is seen at wound site.

Case Report 4

Mr. 'A' 50 years old farmer admitted at the department with a biopsy confirmed malignant melanoma at left heel without any satellite lesion.

He was properly examined for inguinal lymph node which was not found. We consult with oncology department about the patient where they did a CT Scan of abdomen with both inguinal regions. Fortunately, nothing was found positive.



Fig 14 : MM with excision marking.

Then we planned for a wide excision of cancer with keep 2 cm rim of healthy tissue. Tissue sent for histopathology, base and margin clearance.



Fig 15 : Medial planter flap harvest from instep.

Fortunately, all margin and base found cancer free. Then we planned for a medial planter flap to cover excised wound which help him for future walking.



Fig 16 : flap inset at heel.

The flap is based on medial planter artery branch of posterior tibial artery. Donor defect covered with skin graft. Donor site actually not involved with weight transmit because it is in instep of foot arch.



Fig 17 : Flap inset and donor site graft.

We released the patient after one week of operation and sent him to Oncology Department for adjuvant therapy. His flap was well nourished and good looking when he went home.



Fig 18 : Follow up 2 weeks.

He maintained his follow up at every month with good functional and cosmetically acceptable heel to walk.

Case Report 5

Ms. 'F' 48 years old housewife came from Mirsarai which is about 58 Km from Chattogram with a snake bite at dorsum of right hand while she collects wood from nearby forest.



Fig 19 : Injury at dorsum with flap marking.

She was first admitted at local hospital where they treated her with antivenom. The snake was so poisonous all vascular arcade at dorsum collapsed and thrombosed. Skin were necrosis at wound site due to poison of venom.



Fig 20 : Wound, pedicle and part of flap.

We examined her wound and noticed extensor tendons were exposed with surrounding granulation tissue. Then we planned to give a reverse posterior interosseous flap to cover the wound rather than skin graft.



Fig 21 : Reverse posterior interosseous flap cover the whole wound.

Skin graft may contract her extensor tendon and she can't make fist. So flap is ideal for a durable covering for movement of long tendon.



Fig 22 : PIA flap at 2 weeks follow up.

The flap is based on posterior interosseous artery of forearm. We gave her a large, soft, pliable fascio cutaneous flap for future movement of right hand. She was released after one week of surgery. Flap looks healthy, well perfused, durable and good looking.



Fig 23 : Follow up at one month.

We advised her regular physiotherapy and night splintage. She came every month for follow up with good functional and cosmetic look of flap and perfect gripping for hold any object. She had no donor site morbidity.

Discussion

Plastic Surgery Department of Chittagong Medical College Hospital play a key role to manage various trauma wound. In this corner of the country, along with other Trauma Department, Plastic Surgery Department confined with soft tissue coverage of various wound. Actually there are multiple options for cover a wound but flap coverage is

the best way to manage perfectly. The department run various reconstructive procedure like flap coverage, congenital defect correction, cancer management, contracture release as well as skin graft for maintain and also saving life. Study continued for along a year show different flap coverage to manage various vital organ and limbs. Study people randomly selected for trauma patient mostly teenage. All patient has good functional and cosmetic outcome after reconstructive procedure. In one case, deltopectoral flap is given in front of neck to cover larynx which insulted by electric burn, the flap prevent fistula at neck with having good cosmetic look. One FDMA flap covered at right thenar region of a patient, which injured by electric burn. This flap prevents contraction of right hands and give valuable right thumb function. One teenage school boy having massive electric burn which lead to mid arm amputation with a large hole at axilla. Electrical burns constitute 3-5% of all burns and are traumas with severe morbidity and mortality rates^{5,6}.

We give latissimus dorsi muscle flap for covering axilla and upper humerus. His amputation stumped has good cosmetic look and perfect functional movement, which create an ideal stump for prosthesis. A malignant melanoma is excised from heel and give medial plantar artery flap coverage for better walking and cosmetic appearance. Exposed extensor tendon at dorsum of right hand due to snake bite covered by reversed posterior interosseous artery flap for good functional grip to hold any object. Reconstructive run for life at the Plastic Surgery Department of CMCH with all trauma patients continued by proper rehabilitation program like physiotherapy, splintage after flap surgery to maintain quality of life.

Limitation

This study contains small group that actually does not reflect whole scenario of wound coverage in the belt.

Conclusion

All five trauma patients underwent flap surgery in this department have good functional and aesthetic outcome. The department play an important role for managing these unfortunate trauma and cancer patients over many years. After reconstructive surgery we give all patients a ideal guide line for proper rehabilitation. Rehabilitation process

actually a team work to make the patient fit for general wellbeing and function.⁷With the help of physical medicine department every patient continuously doing physiotherapy, wax bath, dynamic and static splintage, and also pressure garments. They keep coming to us after joined their educational and working center. We also care about their scar management after complete wellbeing. The journey of Reconstructive Run for Life of the department continue for improvement quality of human life.

Recommendation

All expose tendons, joint space and weight bearing area should cover with flaps to prevent scarring, contraction and stiffness to ran a working life.

Most of the burn including electric burn, flame burn can prevent by proper education and awareness among citizen.

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Contribution of authors

MSK-Conception, design & final approval.

RA-Design, drafting & final approval.

MNA-Drafting, citing references & final approval.

ND-Critical revision, citing references & final approval.

LKP-Drafting, citing references & final approval.

SDG-Drafting, citing references & final approval.

Disclosure

All the authors declared no competing interest.

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