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Hypertrophic Scar and Keloid - A Wound Complications

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Abstract: ***Hypertrophic scars and keloids are types of scars resulting from an injury to the skin. Hypertrophic scars are limited to the site of injury and may regress over time, while keloids spread beyond the border of injury and do not regress over time. Hypertrophic scar and keloid are complication of wound healing. Hypertrophic scars have collagen in a wavy, regular pattern, whereas keloids have no distinct pattern of collagen. Hypertrophic scar should resolve over time with or without treatment. Keloids may remain on your body long term despite efforts to reduce them. In Ayurveda, Vrangranthi disease can be correlated with hypertrophic scar and keloid.***

Keywords: Keloid, Hypertrophic scar, *Vrangranthi*, *Ayurveda*

1. Introduction

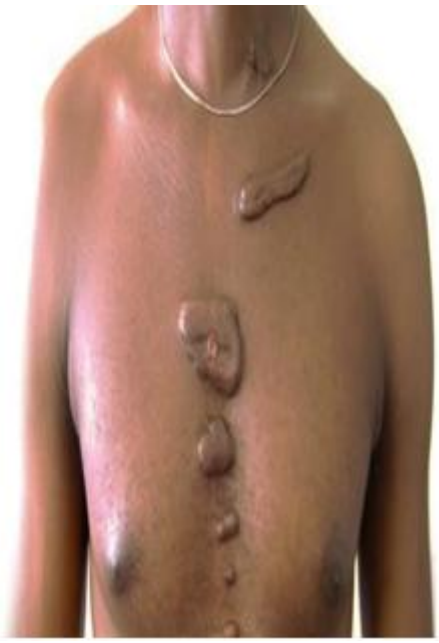
Wound is an injury to living tissue caused by a cut, blow or other impact, typically one in which the skin is cut or broken. Infection is the most common wound complication. Some other wound complications are wound dehiscence, hypertrophic scar, keloid and in deeper wounds complications are Paraesthesia, Ischaemia, Paralysis [1].

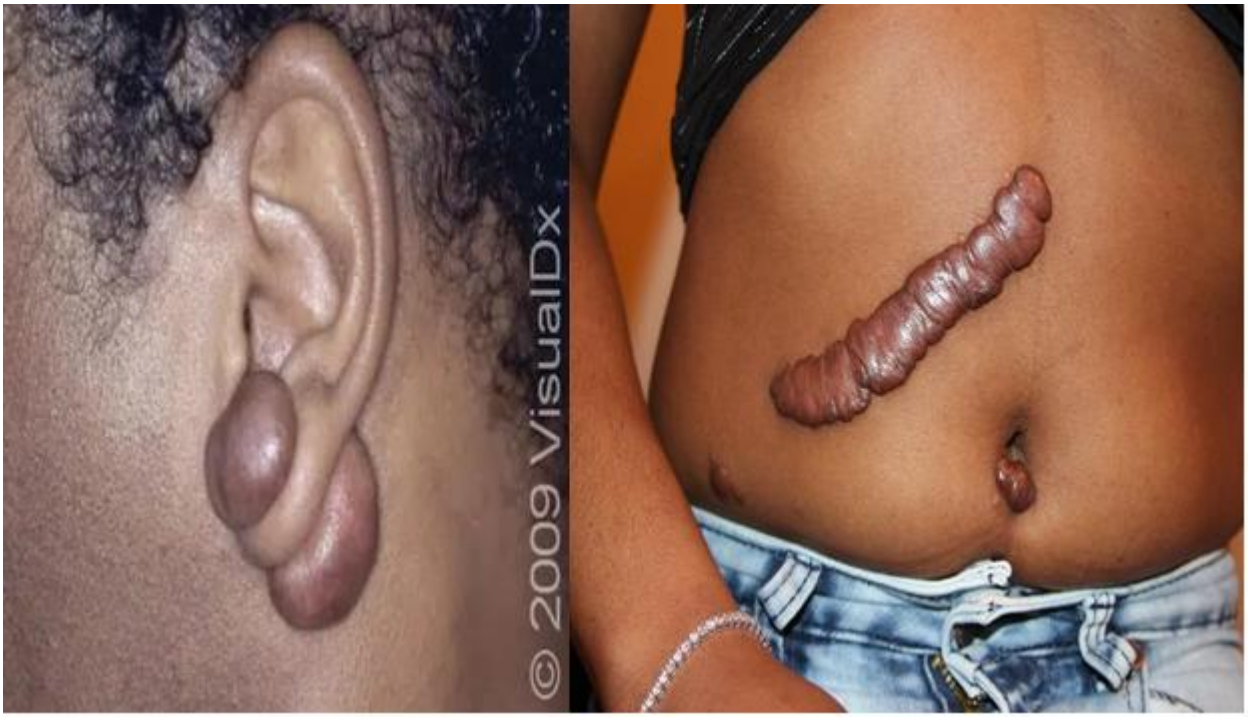
Keloid

Excessive abnormally stretched (type 3) thick collagen tissue bundle arranged with aligning in same plane of epidermis. Extend beyond the scar margin in the normal skin. Defect in maturation and stabilization of collagen fibrils. Normal collagen bundles are absent. Grow for long period, continue to grow even after 6 months. Common in blacks (dark skinned people) / Female. Genetically predisposed, often familial. Rare in Caucasians. It is brownish black/ pinkish black (due to vascularity) in colour, painful, tender, sometimes hyperaesthetic; spreads and cause itching, associated with Ehlers - Danlos syndrome or scleroderma. Spontaneous keloid is occur following an unnoticed trauma without scar formation. Pathologically keloid contains – proliferating immature fibroblasts, proliferating immature blood vessels, type 3 thick collagen stroma [2]. Keloid is hypertrophic appearing scar that continue to evolve over the time without quiescent or regressive phase in the process of wound healing [3]. As per *charak* when doshas accumulate at one particular site part of body becomes thick and give hard feel that is granthi [4]. *Sushruta* define it as vitiated doshas start pathogenesis in *mansa*, *meda* dhatus along with *kapha* accumulates there at one site forming circular thick swelling [5]. *Vagbhata* also said the same *samprapti* [6]. In *Ayurveda Vagbhatacharya* described it as *Vrangranthi*. As per *Vagbhata* it is not a curable condition [7].

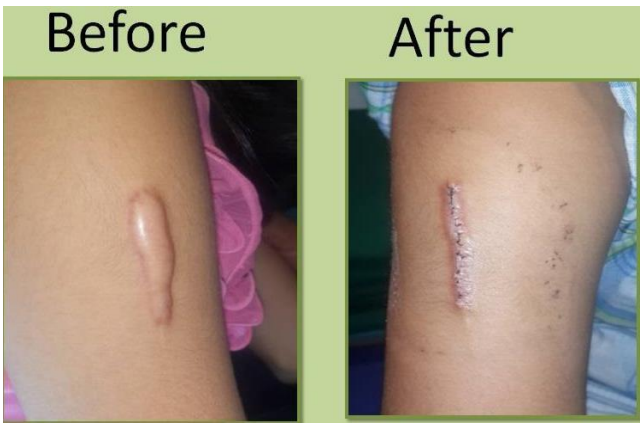
Site: common over sternum (butterfly shape), upper arm near shoulder, chest wall, lower neck in front [8].

Differential diagnosis: Hypertrophic scar, Dermatofibroma (benign fibrous histiocytomas of skin) – commonaly occurring cutaneous entity usually centered within the skin`s dermis [8].





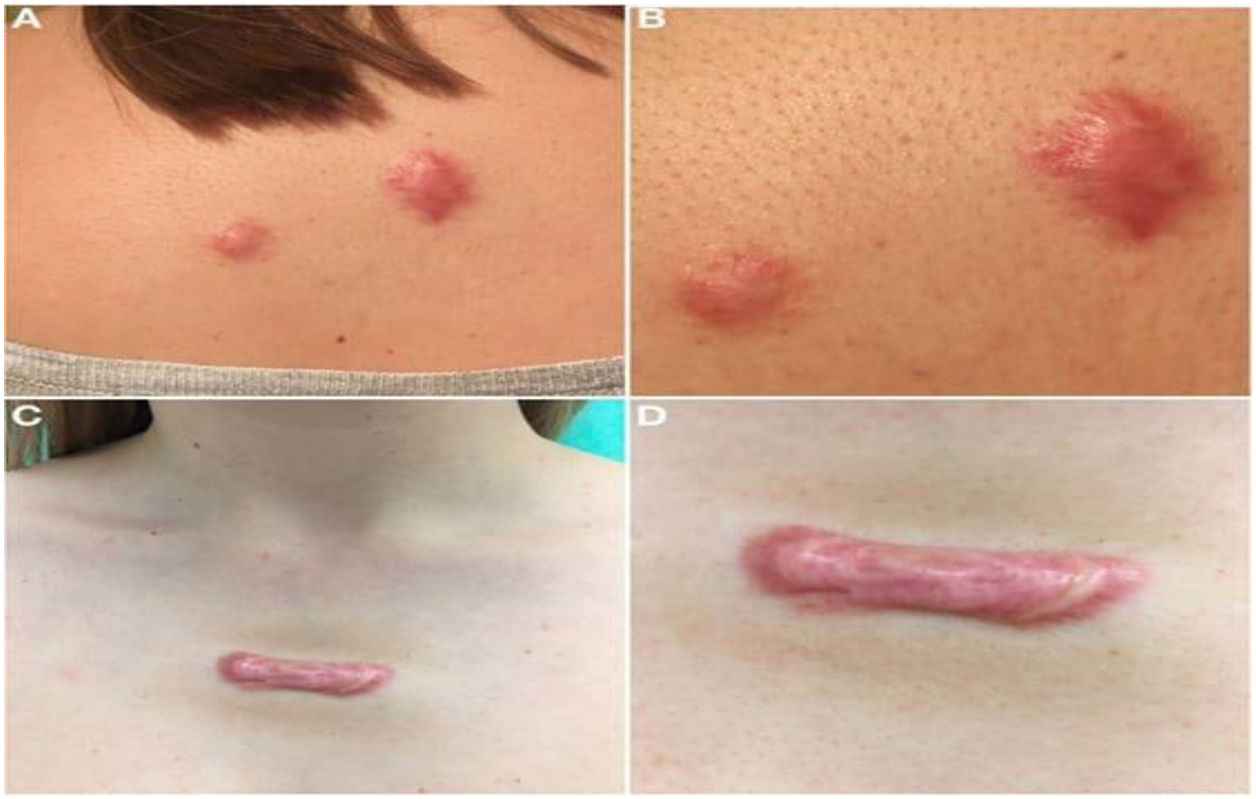
Treatment [8] -
First line of therapy – steroid injection (Intrakeloidal triamcinolone) injected at regular intervals of 7 to 10 days for 6 to 8 times.
It reduces fibroblast proliferation and collagen synthesis.
Silicone gel/ Silicone gel sheeting.
Methotraxate and vitamin A & C therapy.
Topical retinoids, Vitamin E/ palm oil massage.
Intralesional excision - retaining the scar margin (Prevent recurrence).
Laser therapy – Nd - YAG (neodymium - doped yttrium aluminium garnet) laser, cryotherapy.



Interferons may be useful.
Triple therapy – 5 FU (Fluorouracil) local application/ injection, steroid injection, laser.
5 FU (Fluorouracil) and bleomycin local injections.
1st Steroid injection – 2nd excision – 3rd steroid injection.
Excision and irradiation or irradiation alone.
Excision and skin grafting is not ideal / suitable.
Excision and primary suturing has high recurrence rate (> 50%).

Hypertrophic Scar
Excessive formation of abnormal scar tissue containing type 3 collagen (thin) which is raised, often vascular, confined with in margin of original wound or scar, will not extend to normal skin. Common in – wound crossing tension line, deep dermal burns, wounds healed by secondary intention. Growth stop in 6 months and often regresses spontaneously. Not genetically predisposed, not familial. Spontaneous improvement with time occurs commonly (self limiting). Pale brown in colour, not painful, non tender. Recurrence is uncommon [8].

Site - All over the body [8].



Treatment - Controlled by pressure garments. Excision of scar and closure, if require skin graft.2nd line of therapy – Triamcinolone injection [8].

Keloid [9] Hypertrophic scar		
1) Genetic Predisposition	Yes	No
2) Site of occurrence	Chest wall, upper arm, lower neck, ear	Anywhere in the body, common in flexor surfaces
3) Growth	Continues to grow without time limit Extends to normal skin	Growth limits for 6 months Limited to scar tissue only
4) Treatment	Poor response	Good response to steroids
5) Recurrence	Very high	Uncommon
6) Collagen synthesis	20 times more than normal skin (Type 3 thick)	3 – 6 times more than normal skin (Type 3 fine collagen)
7) Relation of size of injury and lesion	No relation, small healed scar can form large keloid	Related to site of injury and duration of healing
8) Age	Adolescent, middle age	Children
9) Sex	Common in females	Equal in both
10) Race	More in black (15 times)	No racial relation
11) Structure	Thick collagen with increased epidermal hyaluronic acid	Fine collagen with increased alpha actin
12) Features	Vascular, tender, itching	Not vascular, non tender, no itching
13) Natural history	Progressive	Shows regression
14) Problems	Hyperaesthesia, Ulceration	Not much

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