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Suprapubic and lower limbs fusion contracture after thermal burn in a child: a rare presentation of common complication

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ABSTRACT

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INTRODUCTION

A 12-years-female presented to tertiary care centre with inability to stand and walk because of fusion of lower limbs above the knee joint with contracture across bilateral hip and knee joints for 2 months. There was history of scald burn of lower abdomen, medial and posterior aspect thigh by hot milk 1 year ago. For which she was hospitalized at local hospital for primary resuscitation and management of bun wound. According to parents as the burn wound was healthy, she was discharged with advice of wound dressing, physiotherapy and follow up. But, parents were illiterate, non motivated and careless. They were non compliant to the instructions. Further, they didn't turned back to the hospital. The child at home used to lay down in lateral position with bending of knees and hip joints. The parants use to cover the wound in single dressing. As the burn wound was on medial aspect of both the thighs and there was a long contact time between thighs healing of wound occurred by formation of bridging tissue between both thighs. This bridging tissue fused both thighs. Further, prolonged sustained bending at hip and knee joints lead linear scar formation on suprapubic area extending from upto mons pubis and scar contracture at both knee joints at poplitial fossa. Thus, the contracture deformity at hip joints, and knee joints don't allow her to stand. The labia majora, minora, vulva and perineum were spared, so she was able to defecate and urinate (in lying posture).

X-ray hip and knee joints didn't reveled any underlying deformed bone or subluxated / dislocated joint.

Contracture release with split-skin grafts was done at hip and knee joints with division of bridging tissue between thighs. Post operatively immobilization was done with static splints interspersed with a routine of daily physical therapeutic exercises. The child recovered but, aesthetic results regarding mons pubis management was not too good.

Discussion: The healing of a burn wound occurs by restitution/complete regeneration (burnt upto stratum papilla with preservation of pilosebaceous glands) or substitution (burn upto stratum reticulare) [1]. The substitutive unspecialized connective tissue finally result in formation of cicatrix. The wound contraction and epithelialization from the margins lead to contractures. Except for the superficial dermal burns, all deeper burns (2nd degree deep dermal and full thickness) heal by scarring. Scar contracture is the end result of the process of contraction across the joints [2-5]. This lead to

significant functional and aesthetic deformity in patients of thermal wound survivors. The prevention or minimization of contracture formation is the best way to prevent the morbidity of these patients [2-7].

In the current era there are recent advances in the management of thermal burn viz use of autologus keratocyte, bioengineered humern keratinocytes, alloderm, basic fibroblast growth factor (bFGF), artificial dermis etc to provide best aesthetic and functional results. The bFGF is a mitogenic and chemotactic factor for fibroblasts and endothelial cells, and stimulates angiogenesis, accelerated wound healing and melanization [8]. Artificial dermis allows neodermis formation over the surface of wound, minimizes the number of migrating myofibroblasts hence prevent contracture [9]. But in developing countries still, the specialist care is not available at peripheral areas. Our burn patients was treated by a poorly skilled health care providers during acute phase. He aimed to close the raw burn wounds of thighs in common dressing without limbs separation. He also not advised physiotherapy for full range of motion across hip and knee joints. The scar collagen and elastin are relatively un-cross linked and malleable during their initial deposition [7-8]. Gentle, passive and sustained stretching exercise and splinting exploits this malleability and is an effective technique for the lengthening of bands of scar tissue and increasing range of motion across joints [2]. Figure 2 described the best positions and splints, which could be adopted by treating physicians to prevent joint contracture and fusion deformity in our case. The lack of awareness of treating physician, inappropriate counseling and motivation of parents might lead to this morbid complication in our child.

The author recommended all burn patients should receive physiotherapy and rehabilitation consultation as soon as they become clinically stable. This is particularly important in patients with burns that extend over the joints. Range of motion and neutral positioning of joints needs to be stressed to prevent contracture, ankylosis and joint disability formation [10].

Pediatric burn patients require integrated approach by burn specialist, paediatrician, highly skilled nursing staff, physiotherapist, social workers, psychologists, occupational therapists [10]. This become very important if the parents are illiterate, non-complaint with the instructions or can't come for follow up because of remote health access. Such patients should be treated at hospital under clinician and physiotherapist observation even in the rehabilitation phase [5]. The consequences of burn contracture are not only disfiguring, disabling, costly, increasing workload on medical fraternity, but also such complications are most difficult to treat.

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Figure legends:

1. Clinical photograph of 12 years-old-female showing (a) scar contracture deformity at both the knee joints, (b) Epithelialized bridging tissue between both thighs leading to limbs fusion spared vulva), (c) scar contracture from suprapubic area upto mons pubis leading to flexion deformity at bilateral hip joints.

2. Use of pillow in between both limbs to keep thighs apart and/ or the use of limb separator during rest as well as during mobilization can prevent the fusion deformity in the burn wound involving medial aspect of both lower limbs.

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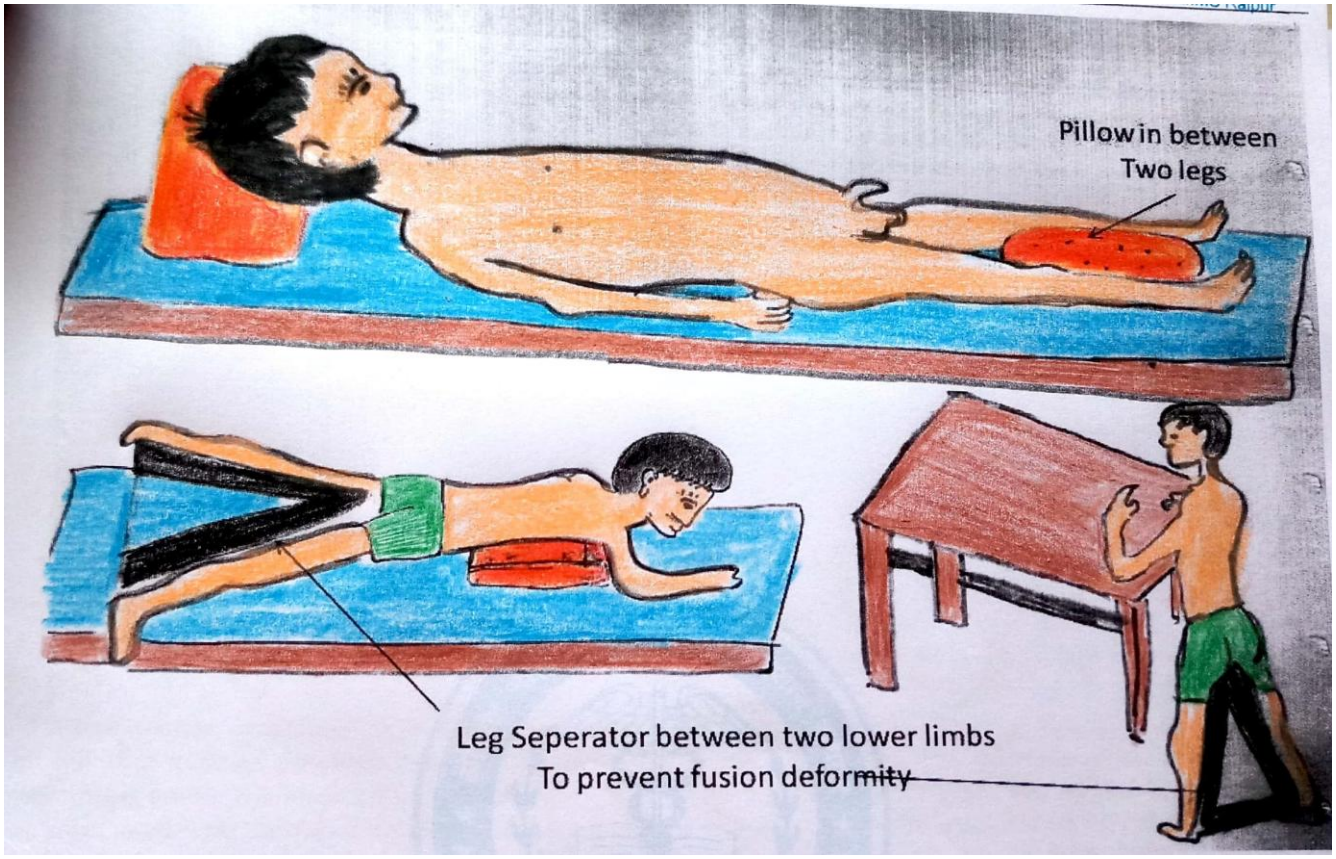

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