

Letter to the Editor

Cervical collar-related submental keloid formation

Ankur Khandelwal¹, Baby Pegu¹, Priyadarshi Dikshit², Dalim Kumar Baidya¹

Departments of ¹Anaesthesiology, Critical Care and Pain Medicine, ²Neurosurgery, All India Institute of Medical Sciences, Guwahati, Assam, India.

E-mail: *Ankur Khandelwal - ankurchintus@gmail.com; Baby Pegu - babypegu@gmail.com; Priyadarshi Dikshit - priyadarshidikshit@aimguwahati.ac.in; Dalim Kumar Baidya - dalimkumar.ab8@gmail.com



*Corresponding author:

Ankur Khandelwal,
Department of Anaesthesiology,
Critical Care and Pain
Medicine, All India Institute of
Medical Sciences, Guwahati,
Assam, India.

ankurchintus@gmail.com

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Dear Editor,

Keloids are pathological scars that result from aberrant wound healing in response to cutaneous injury or inflammation and present clinically as firm, rubbery nodules.^[3] A hallmark of keloids is their invasive horizontal growth that extends beyond the boundaries of the original wound in contrast to the non-invasive growth of hypertrophic scars that are contained within or just around the original wound edges. Overactive fibroblasts producing high amounts of collagen and growth factors are implicated in the pathogenesis of keloids.^[1,5] Here, we report a case of a 9-year-old male child who developed submental keloid secondary to prolonged application of a cervical collar (C-collar).

The aforementioned case was admitted to our intensive care unit (ICU) following C1–C2 posterior fixation for os odontoideum with high cervical compressive myelopathy with pentaplegia. The patient underwent a tracheotomy 7 days after surgery due to the prolonged need for mechanical ventilation. A hard C-collar was applied for an initial 5 days to neutralize the neck position. However, constant irritation of the chin by the upper part of the C-collar led to skin erythema, followed by laceration. As a result, the hard C-collar was replaced with a semi-rigid C-collar, and antiseptic medications were applied locally. The patient remained in the ICU for almost 90 days. Although the C-collar was periodically removed to facilitate wound healing, the patient developed a typical keloid over the injured area, possibly due to repeated stimulation of the site [Figure 1].

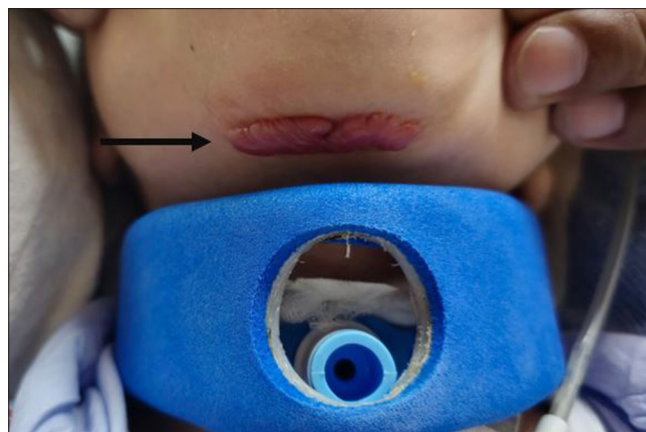


Figure 1: Submental keloid (indicated by arrow) and C-collar *in situ*.

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C-collars are essential medical devices used primarily to immobilize the cervical spine in both traumatic and non-traumatic conditions, aiming to prevent or reduce the risk of secondary spinal cord injury. However, C-collar-related pressure injury in surrounding anatomical locations (chin, occiput, clavicle, mandible, chest, tracheal prominence, etc.) is an important caveat of C-collar application. In a recent scoping review study that included 8 articles, the reported incidence of C-collar related pressure injury varied between 1.1% and 78.4%, most injuries being grades 1 and 2. The most common risk factors were duration of C-collar use, hospitalization in ICU, depressed sensorium, and longer hospital stay.^[2] Grade 4 pressure injuries related to C-collars are very rarely reported, and keloid formation has never been documented. The predominant reason for C-collar related pressure injury is due to low subcutaneous tissue between the overlying skin and underlying bone, which quickly converts superficial injuries into deep injuries. The inciting event is usually a low-grade inflammation due to the direct contact of the collar with the skin. Moreover, since patients with a C-collar *in situ* are largely immobile, are repositioned less frequently, and require logroll repositioning to keep the cervical spine in alignment, the pressure points remain unrelieved for extended periods, increasing the risk of injury progression.^[2,4]

While the application of a C-collar is an essential and life-saving intervention for patients with potential spinal cord injuries, it also places them at risk for threats to skin integrity. A multidisciplinary approach to care and preventive interventions for C-collar-related pressure injuries should be adopted. Regular assessment of the need for a C-collar, intermittent removal to avoid persistent pressure on the skin, replacement of the hard collar with a soft collar whenever possible, and nursing education regarding regular site inspection and routine care should be prioritized.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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