

Thumb autoamputation following tourniquet syndrome

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DESCRIPTION

A 12-month-old boy presented to the paediatric emergency department (PED) with ischaemic necrosis of the distal phalanx of the left thumb as a result of tourniquet syndrome.

Six days prior to presentation, an adhesive bandage had been applied to the digit to discourage thumb sucking. His mother described crying and irritability, and when the dressing was removed 48 hours after application, the infant's mother noted the digit to be shrivelled and mottled. The following day, the area began to blister and he was brought to his general practitioner for review, where hospital attendance was advised. The infant presented to the PED 72 hours later.

Examination of the left thumb revealed dry necrosis of the nailbed and distal phalanx ([figure 1](#)). The infant was admitted under the joint care of the plastic surgery and general paediatric teams. The injury was initially managed conservatively. The distal phalanx subsequently autoamputated and formal surgical debridement and terminalisation at the level of the interphalangeal joint was undertaken. At follow-up 12 months later, the injury had healed well with a satisfactory functional outcome ([figure 2](#)).

The severity of the injury coupled with the delay in presentation raised suspicion of neglect or non-accidental injury, and the case was referred to the

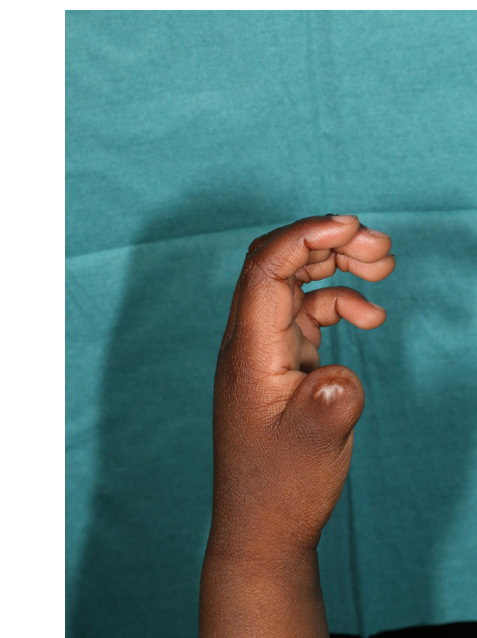


Figure 2 Clinical photograph taken 12 months post terminalisation at the level of the interphalangeal joint.

Medical Social Work Department. The history given by both parents was consistent with the presenting injury. No other concerning injuries or previous hospital presentations were noted, and appropriate child-parent interaction was noted throughout. A child protection case conference found that the injury was unintentional and that the infant was not at on-going risk of significant harm through neglect. A family support plan was put in place on discharge to the community.

This case represents a variant on tourniquet syndrome. This syndrome is more commonly associated with hair or thread wrapped around a distal appendage, also known as hair-thread tourniquet syndrome (HTTS).¹ Regardless of the cause of constriction, it is regarded as a surgical emergency as circumferential constriction impedes lymphatic drainage with resultant venous outflow obstruction and oedema. Raised interstitial pressures then restrict arterial supply causing ischaemia and associated pain.² If it is not possible to remove the tourniquet in the PED, general anaesthetic and removal in theatre may be required.³ In cases of significant vascular compromise necrosis and autoamputation may occur as in the case illustrated here.

A large single-centre retrospective study of HTTS performed in a major children's hospital analysed 81 cases over a 10-year period. In 85.2% of cases, the toes were affected, the fingers in 6.2% and



Figure 1 Clinical photograph from initial presentation demonstrating dry necrosis of the nailbed and distal phalanx of the left thumb extending 1 cm proximal to the nail fold with a visible tourniquet mark at the interphalangeal joint.



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external genitalia in 8.6%.³ Infants and young children are most commonly affected with one retrospective study of admissions to a PED reporting a mean age of 5.5 ± 4 months.⁴

Due to the insidious nature of this syndrome, an awareness of and high index of suspicion for this condition are required for timely detection. Added vigilance is required in the case of preverbal children and those with speech or learning difficulties who may not be able to express discomfort easily.

Learning points

- Tourniquet syndrome is a surgical emergency that if not promptly treated can result in significant vascular compromise and loss of an appendage.
- A high index of suspicion is required for timely detection especially in those who cannot express discomfort easily, such as preverbal children, and those with speech or learning difficulties.

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