

CASE REPORT

Lacrosse stick entrapment injury to the thumb

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Br J Sports Med 2003;**37**:272–273

A case of injury to the left thumb following an errant stick check, and subsequent entrapment of the digit in the open sidewall of a lacrosse stick, is presented. A circumferential laceration, severe swelling, and bruising to the proximal phalanx resulted. This case report emphasises the need to limit the dimensions of openings in the sidewalls of lacrosse sticks to prevent the occurrence of this and other preventable injuries.

Acute injuries to the hand, fingers, and thumb are common in sports that require the use of stick-like implements.¹ The mechanism of injury is often a single, forceful blow from an opponent's stick, and trauma can result when athletes are wearing^{2,3} or not wearing^{4–6} protective gloves. The injurious force is the product of a mass moving with an acceleration ($F = ma$), and therefore rules are used to limit the dimensions, materials, and thus the mass of sticks. This is the case in women's lacrosse, in which the maximum allowable mass for a field player's stick, or crosse, is 567 g. Women's lacrosse is a non-contact invasion game,⁷ one in which 12 players attempt to propel a ball into the opponent's goal while preventing their opponent from doing the same. Crosses are an integral part of the game as they are used to pass, catch, shoot, and pick the ball up from the ground, and to check opponents' crosses. Therefore, the act of striking an opponent's hand with the crosse is explicitly prohibited by the rules of the game, yet inadvertent collisions of this nature do occur and may lead to acute traumatic injuries of the hand and fingers.⁸

Over the past three decades, crosses consisting of triangular shaped moulded plastic heads mounted on aluminum or graphite handles have grown in popularity. Early versions of the plastic heads were similar to wooden crosses in that their sidewalls were solid (fig 1), but open sidewall designs have evolved. These open sidewalls vary in design, but most commonly consist of three to six small openings created by a series of cross struts. More recently, open sidewalls consisting of a single elongated opening have appeared on the market. Open sidewalls clearly reduce the mass of the crosse and may be advantageous in reducing the force delivered by an errant check to the hand. This is of some import in women's lacrosse because most players opt to play the game bare handed even though the rules allow players to wear minimally padded gloves. However, numerous verbal reports of a new mechanism of injury, one in which the finger of a player becomes entrapped in the open sidewall of an opponent's crosse, have begun to emerge. At the 2001 World Cup competition, we witnessed such an occurrence.

CASE REPORT

A 22 year old midfielder, running in pursuit of a ground ball, sustained a ring shaped laceration accompanied by significant swelling and bruising to the proximal phalanx of the thumb after an errant stick check by her defender. The defender's stick had an open sidewall consisting of a single elongated

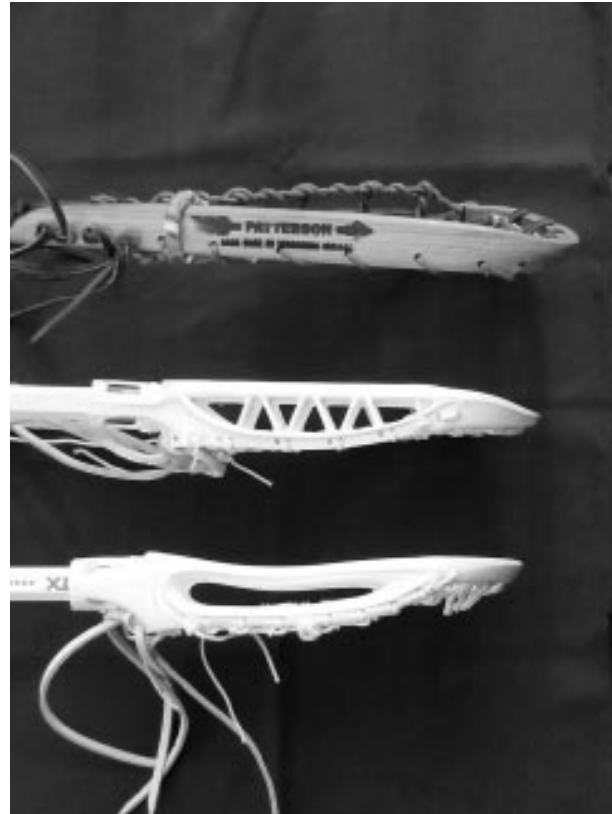


Figure 1 Various stick sidewall designs including (from top to bottom) a solid sidewall, a multiple opening sidewall, and an elongated, single opening sidewall.

opening. Contact resulted in the midfielder's thumb entering into and becoming entrapped in the sidewall. The defender, believing that her opponent was illegally grasping the head of the crosse, aggressively and repeatedly attempted to pull the stick away. The defender continued her attempts to free the stick until the umpire stepped between the two players. Given that the edges of the opening were sharp, some effort and care were required to extract the injured player's thumb from the crosse without incurring further damage. The injured midfielder immediately left the field and was treated by the team trainer. Upon examination, there was no obvious deformity and the player had full function of her thumb. A circumferential laceration at the base of the proximal phalanx was noted. Cryotherapy was used to reduce the swelling and to control the bruising, and the player returned to action the next day with protective bandaging.

DISCUSSION

A case of acute trauma resulting from an athlete's thumb becoming entrapped in the sidewall of an opponent's lacrosse stick has been reported. Although the true incidence of this

type of injury is unknown, such an occurrence could be prevented in the future by prohibiting in women's lacrosse the use of moulded plastic crosse heads with openings large enough to allow entry of a finger or thumb. We recommend openings of no larger than 2 cm in length, width, or diameter. Two centimetres equals the diameter of a size 10 ring finger and is the approximate maximum dimension of openings found in one of the first and most popular open sidewall crosse heads used in the game during the late 1980s and early 1990s. We are not aware of any reports of finger entrapment associated with this particular crosse head. The openings should also have blunt or rounded edges so as to reduce the risk of lacerations. It is well documented that legislators in women's lacrosse have long relied on rules and their strict enforcement to keep the game safe.^{9 10} We strongly urge the introduction of a rule limiting the dimensions of openings in the sidewalls of crosses to prevent entrapment injuries. Such a rule would not be required in men's lacrosse in which heavily padded gloves are worn.

We have reported a case of laceration, bruising, and swelling to the proximal phalanx of the thumb in a young adult female, yet we feel that it would not be untoward to propose that the smaller fingers of younger, prepubescent athletes would be at risk for the same mechanism of injury. The resulting injury, moreover, could have been much more serious—for example, fracture, dislocation—if the defender had twisted or rotated the stick in her attempt to free it from the hand of the injured player. Action is required if these types of injuries are to be prevented in the future.

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Take home message

Given that entrapment injuries may occur, the use of moulded plastic lacrosse sticks with large sidewall openings is not recommended in women's lacrosse.

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Accepted 30 June 2002

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