

A rare penetrating injury through the axilla caused by stilt pole in a Bajau Laut boy

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SUMMARY

An 8-year-old child of Bajau Laut descent (a stateless tribe in Eastern Borneo and the Sulu archipelago) presented following a fall, with penetrating injury through the axilla caused by a stilt pole, exiting at the supero-anterior aspect of the left shoulder. Due to the lack of comprehension of modern medical treatment and poor language skills, the parents refused to consent for detailed radioimaging studies, nor surgical removal and exploration in the operating theatre. The removal of retained stilt pole was done in casualty area in Hospital Tawau, followed by local exploration under sedation and local analgesia. Despite the horrific injury, there was no limb-threatening neurovascular injury sustained. Management of such injury in the nomadic Bajau Laut population provides valuable insight and about the challenges and decisions of management.

INTRODUCTION

The Bajau Laut people are nomadic sea gypsies, who have no nationality and live inside their lepa (wooden boathouses) or sea huts in Eastern Borneo and the Sulu archipelago.¹ They use traditional wooden stilts (kertang) to assist their mobility to move between their boathouses (lepa) or adjacent sea huts. Although rare, penetrating injury through the axilla warrants urgent and meticulous assessment. The outcome of such injury is largely dependent on the involvement of the neurovascular structures. We present here an interesting case of a child who suffered injury to his left shoulder caused by the stilt pole and describe the challenges and dilemmas in the management of such cases in a rural, district hospital.

CASE REPORT

An 8-year-old boy of Bajau Laut descent was brought to the Casualty Department, Hospital Tawau, Sabah, Malaysia after he fell while walking using traditional stilts on his family lepa. He sustained pain over his left shoulder, with the stilt pole penetrating through his axilla. He was able to move his elbow and hand, despite the numbness throughout the left upper limb.

Examination revealed a swollen left shoulder, with a wooden stilt penetrating through the axilla and exiting superiorly, anterior to the acromioclavicular joint (Fig. 1). The shoulder was tender on palpation, but there was no bleeding. The peripheral pulses were palpable and recorded biphasic on the

Doppler machine. Peripheral examination of all neural branches of brachial plexus exhibited no abnormal finding for their motor components. There was however reduced sensation upon assessment of C7, C8 and T1 dermatomes.

As wood is relatively radiolucent on radiographs, subsequent shoulder x-ray views failed to visualise the stilt (Fig. 2). There was no dislocation of the glenohumeral joint, nor fracture involving the humeral head, glenoid or clavicle.

Further radioimaging studies (including computed tomography (CT) scan and magnetic resonance imaging (MRI)) and the plan for removal of the stilt with subsequent exploration and possible repair of the injured muscle or neurovascular structure in the operation theatre, was abandoned after failure to get the consent of the parents. They only agreed for the removal of the stilt to be done under sedation without the patient being wheeled into the operating room.

Thereafter, the stilt was carefully removed under aseptic technique in the procedural room in the Casualty Department. The patient was given sedation using fentanyl, in adjunct to pethidine as analgesia. The stilt was cut at both ends, leaving the remaining penetrating part of 15cm in length. The penetrating wound over the axilla was cleaned and slightly extended. The removal was done in a single-pull technique, rather than a twist-and-turn technique, to minimise soft tissue damage.

Post-removal, the numbness improved drastically, while the peripheral pulses were recorded to be normal. The peripheral nerves were re-examined and found to have no neural injury – sensation over all dermatomes were intact. He was able to move the shoulder, with the ranges of motion being full in all direction. The two oval-shaped wounds left – the entry wound at the axilla region and the exit wound at the supero-anterior part of the shoulder – were irrigated and debrided. Local exploration found no superficial structural damage. Subcutaneous closure was then done.

The patient was observed in the Casualty Department, Hospital Tawau for six hours. His parents refused admission of the patient as they want to go back to the sea as soon as possible. The child was discharged with antibiotics and analgesic, and the parents were advised to bring the boy ashore should any sign of infection develop.

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Fig. 1: Clinical image of the Bajau Laut child showing the stilt pole penetrating through the axilla and exiting at the supero-anterior aspect of the shoulder. To accommodate removal, the stilt pole was cut at both ends, leaving only the remaining penetrating part of 15cm in length.

The parents and the child returned for the scheduled outpatient follow-up appointment three weeks after the injury. The wound was completely healed, the range of motion was full and there was no residual symptom. The child was discharged with no further follow-up being required.

DISCUSSION

Despite their nomadic sea-faring lifestyle, access to healthcare in Malaysia is not an obstacle for Bajau Laut population.¹ Although they have neither documents nor financial means, the main reason for their avoidance to visit public healthcare facilities is only known to them. However, being a stateless community does hinder them from access to formal education and official health programs like vaccination.¹ The complex nature of their lack of understanding about modern medical treatment, combined with limited language obstacle skills, low education status and illiteracy provided challenges in the management of this particular case.

The traditional stilts (kertang) are used in Bajau Laut's everyday lives to assist their mobility, and injury associated with the usage of stilts is unusual. The normally blunt proximal end provides little harm. Thus, in this case, the penetrating injury suggested an unfortunate, violent fall. We have found no reported case of such injury in the literature.

Penetrating injury of the shoulder through the axilla is reported sporadically in reports. Discussions usually distinguish the incidence of these injuries among civilian and



Fig. 2: Radiograph visualising both shoulder joints from the AP view – there was increase in opacity of the soft tissue silhouette over the left shoulder (suggesting the position of the stilt pole); however the wooden stilt pole was generally radiolucent. There was no fracture or dislocation observed, nor injury to the proximal humerus physeal plate.

military personnel.^{2,3} Gunshot wound remains as the main mechanism, followed by motor-vehicle accidents, industrial traumas, sports injuries and other types of penetrating trauma including iatrogenic injury.^{2,4} Presentation to the casualty departments of hospitals may vary, usually due to bleeding, retained foreign body, weakness/flail arm and ischemic limb.²

Initial assessment and management of these penetrating injury through the axilla should comply with the Advanced Trauma Life Support (ATLS) protocol. Meticulous assessment of the neurovascular status of the limb is of paramount importance, as it is mainly associated with brachial plexus and axillary or subclavian artery injury.^{3,5} It was miraculous that in our case that this child narrowly-escaped such predicament.

Normally, immediate imaging studies including radiograph and CT scan allow better assessment in penetrating injuries with retained foreign bodies. This also helps in pre-operative planning, especially if there is a need to remove the foreign body in situ or repair of the injured structures. Angiography is indicated in cases with pulse discrepancy, presence of bruit and large hematoma.² CT myelography, MRI and electrophysiological studies can be used in adjunct for suspected neural injury, however they are rarely used in acute settings.⁴

Subsequent management of such injuries revolves around whether the neurovascular structure is involved or not. Injuries to the artery require urgent exploration in the operating theatre. In most cases, mortality is attributed to

difficult surgical access to repair ruptured axillary or subclavian artery.^{2,3} Surgery is technically-demanding and may include a clavicular incision with deltopectoral extension, with the need of disarticulation of the sternoclavicular joint to visualise distal subclavian or proximal axillary vessels.³

Major long-term morbidity is associated with injury to the brachial plexus.^{2,4} Distal roots (C8 and T1) injury has poorer prognosis if compared to proximal roots.^{4,5} In cases of lacerated brachial plexus injury, 80% of the patients require primary repair or neurolysis without secondary procedure, although half of them may need a graft. The outcome of brachial plexus repair is favourable up to 60% of the cases.⁵ In conclusion, although rare, penetrating injury through the axilla warrants urgent and meticulous assessment. The outcome is largely dependent on the involvement of the neurovascular structures. Management of such injuries in the nomadic Bajau Laut population provides valuable insight and better understanding about the challenges and decisions of management.

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