Unexpected outcome (positive or negative) including adverse drug reactions

Bullosis diabeticorum following carpal tunnel decompression

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Correspondence to Mr Thisara Weerasuriya, drthisara@yahoo.co.uk**Summary**

A 76-year-old gentleman underwent carpal tunnel decompression on his right dominant hand under local anaesthesia. He was diabetic and otherwise healthy. He presented 3 days after with ischaemic blisters of his lateral three and a half fingers on the finger tips. This complication following carpal tunnel decompression or following the use of local anaesthetics at the wrist has not been documented so far in the literature on the PUBMED data base. The authors wish to highlight this rather unusual complication encountered following this common procedure in orthopaedic surgical practice.

BACKGROUND

The development of ischaemic blisters in the median nerve territory of the hand following carpal tunnel decompression is not documented in the published scientific literature on the PUBMED data base. Repeated search results using key words of 'ischaemic blisters following carpal tunnel decompression'; 'carpal tunnel decompression, ischaemic blisters of fingers'; 'local anaesthetic, ischaemic blisters of fingers' failed to reveal any articles.

This case report highlights an unusual and rare complication of a very common surgical procedure.

CASE PRESENTATION

The patient presented with typical clinical features of right carpal tunnel syndrome. He was a well-controlled diabetic. Following a positive nerve conduction study, he underwent a carpal tunnel release of his right dominant hand. The operation was done under local anaesthesia with epinephrine without using a tourniquet. It was an uncomplicated procedure. He was discharged on the same day following the procedure. Three days later, the patient presented with ischaemic blisters of his finger-tips involving the right index finger, middle finger and radial half of the ring finger.

Capillary refill was under 2 s when the patient presented with the blisters and the neurological integrity of the fingers were preserved. The blisters were incised and serous fluid drained. The ischaemic skin was debrided in all three fingers (figures 1–4).

INVESTIGATIONS

A nerve conduction study was performed to confirm the diagnosis of carpal tunnel syndrome before undertaking the decompression.

DIFFERENTIAL DIAGNOSIS

- ▶ Bullosis diabeticorum
- ▶ Ischaemic blisters of the fingers
- ▶ Reflex sympathetic dystrophy.

TREATMENT

The ischaemic blisters were drained by surgical incision and the ischaemic skin was debrided in all three fingers.

The wounds were regularly dressed and they healed well.

OUTCOME AND FOLLOW-UP

- ▶ The median nerve symptoms due to the carpal tunnel compression improved completely following the release.
- ▶ The ulcers which resulted from the blisters being debrided healed well without complications.
- ▶ The patient is still being followed up for the 3rd month at the time of this case report being written up.

Figure 1 Right hand showing the carpal tunnel release scar and ischaemic ulcer of ring finger after debridement of blister.

Figure 2 Ischaemic ulcer resulting from debridement of the ischaemic blister of the ring finger.

DISCUSSION

Carpal tunnel decompression is one of the common surgical operations undertaken in any orthopaedic practice. It is the most commonly performed procedure in hand surgery.¹ This procedure can be done with a tourniquet being used to obtain a bloodless field and using local anaesthesia.^{2,3}

It is common to be performed under local anaesthesia with epinephrine being used and a tourniquet not being used.¹ A study done by Dillon *et al* in 2008 showed increased effectiveness and patient acceptability with the use of local anaesthetic with epinephrine and omitting the use of a tourniquet.¹ Gibson reported the use of epinephrine and local anaesthesia for carpal tunnel decompression and noted the omission of the tourniquet and better patient tolerance.⁴ However, no papers report the complication of ischaemic blister formation in the median nerve territory of the hand or fingers and no case reports were found in the PUBMED data base describing this complication.

This is a unique case of ischaemic blistering of the fingers innervated by the median nerve following the use of local anaesthetic and epinephrine at the wrist for a carpal tunnel decompression.

Though a differential diagnosis of reflex sympathetic dystrophy was listed it is an uncommon complication following carpal tunnel decompression. This patient did not have the typical features of reflex sympathetic dystrophy such as diffuse pain, loss of hand function and significant autonomic dysfunction.⁵

Figure 3 Close up view of the ulcer on the ring finger.

Figure 4 Ischaemic ulcer on ring finger with residual changes due to previous ischaemic skin blisters on index and middle fingers of the right hand.

Bullosis diabeticorum is also known as bullous disease of diabetes and is a rare, distinct, spontaneous, non-inflammatory blister forming condition where the aetiology is not quite known.⁶ This was first reported in 1930 and there is a male preponderance.⁶ It was reported in nearly 2% of the diabetic population in a study done in India.⁷ They are common in the hands and the feet with the lower extremities being more common.⁶ Histology clearly shows the absence of the inflammatory element in the tissues.⁶ In our patient it could well be that the carpal tunnel decompression triggered the bullous eruptions. However, there is no way of definitive proof. There is no specific treatment for the condition and the bullae tend to heal spontaneously without scarring.⁸ Though the bullae were debrided in the case under discussion no infection was detected and the resultant ulcers following the debridement of the bullae did heal completely without scarring. Though several case reports were found in the PUBMED data base including a collection of 12 cases⁸ of the bullosis diabeticorum, none were found to have been reported after a carpal tunnel decompression.

Learning points

- ▶ Bullosis diabeticorum is a rare condition associated with diabetes with an unknown aetiology.
- ▶ Bullosis diabeticorum could have been triggered off by trivial surgical operations in diabetics
- ▶ Ischaemic blister formation could be a complication of Epinephrine and lidocaine mixed anaesthetic even when it is used at the wrist away from the fingers.
- ▶ Use extra caution when using lidocaine with Epinephrine in patients with possible vascular compromise even if the site of infiltration is away from areas perfused by end-arteries.

Competing interests None.

Patient consent Obtained.

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