

Foreign Bodies in the Neck Following Low Velocity Blast: A Case Report

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SUMMARY: This case is a report of low velocity missile wounding, complicated by foreign bodies which entered the wound as secondary missiles. High velocity missiles are known to introduce debris, but it is less common for low velocity missiles to do so.

Case Report

A 42 year old man who sustained multiple shell fragment injuries was admitted to the Aomara Casualty Hospital. On examination he was found to have shrapnel wounds on both his legs. These were treated using standard primary debridement techniques for the removal of missile fragments and dead tissue.

Subsequently, his general condition improved, but six days after admission he complained of a lump in his neck, examination of which revealed a swelling situated slightly below the left submandibular gland.

The swelling was about 3 cm in diameter and of firm consistency. It was just above an area of skin on the neck which contained healing superficial scar tissue.

The lips, gingivae, teeth, tongue and palate all appeared normal. There was a small scarred wound in the nasobuccal fold.

Posterior - anterior and true lateral radiographs of the skull revealed radio-opacities, consistent with a diagnosis of foreign bodies lying in the maxillary sinus and in the neck (Figs 1 & 2). The larger foreign body noted in the neck appeared triangular and had a smaller more densely radiopaque area contiguous with its lower anterior border.

Management

The patient's only complaint was the presence of a painful swelling in his neck and it was therefore decided to explore this swelling under local anaesthesia.

A 4 cm skin incision was made over the swelling which revealed two pieces of stone chippings, similar to those found on road surfaces. Beneath the chippings, there was a piece of metal and all these foreign bodies were removed. The cavity was irrigated with saline and the wound was closed with black silk sutures. Antibiotic cover using intramuscular procaine penicillin was administered. Healing was uneventful.

Discussion

Any differential diagnosis of a radiopacity on an x-ray must include the possibility of an artefact projection. Once the presence of a radiopacity has been confirmed



Figure 1. PA x-ray view to show two radiopaque foreign bodies which are lying in the right submandibular area and one in the right maxillary antrum.

by repeating the x-ray from another angle, a different diagnosis can be made. In this case a foreign body was the most likely diagnosis because there was a history of recent trauma and the shapes of the radiopacities were not anatomically recognisable.

An avulsed tooth crown was considered, but discounted because the shape and relative density of the objects were not consistent with this diagnosis. Also, in

this case all teeth were present at intraoral examination, but an unerupted third molar could easily have been displaced into the submandibular triangle.

A calcified submandibular lymph node is often found in the same areas as the radiopacities noted on the x-ray, and because the calcified nodes may be found on the surface or inside the capsule of the submandibular gland, this would be a possible diagnosis. However calcified glands are usually considered to be "end stage" pathological processes and so would be unlikely to be associated with sudden and enlarging painful neck swelling, unless they had become subject to secondary infection.

A painful swelling accompanied by a calcified mass in the submandibular space is usually indicative of a sialolith. Sialoliths have characteristic shapes and patterns of radio-density similar to the larger circular shape, but without the more radiopaque triangular area. A phlebolith sometimes occurs in the floor of the mouth, but is usually associated with a varicosity, and there is no evidence of this on x-ray.

Calcification in the walls of the facial artery and myositis ossificans are rare occurrences. The former involves a length of arterial wall and exhibits a wavy calcified image, and the latter is characterised by the formation of bone in the interstitial tissues of the muscles, usually the masseter muscle when the process involves the facial muscles.

The foreign bodies which remained were left alone, partly because antral exploration and possible oro-antral fistula were complications to be avoided in the interests of getting the casualty mobilised as quickly as possible. Foreign bodies in the antrum are not uncommon findings after road accidents and a review by Bradley¹ lists a variety of objects including an autogenous toe following a land mine explosion. However, with this present case it was felt that as the objects were not in a position to cause further damage by pressure on a nerve or erosion of a blood vessel they should be left. If the symptoms of sinusitis developed or possibly if the casualty became an air crew or naval submariner then they should be prophylactically removed.

Finally, it is of interest to consider how the road chippings came to be in the neck. High velocity missiles are known to produce cavitation on entering the tissues. As part of this cavitation process, debris may be sucked into an entry wound, but low velocity wounds do not behave in this way. It is of course possible that the road stone chippings simply fell into the entry wound made by a metal fragment which had breached the skin and left an open wound, but against this is the fact that there



Figure 2. Lateral x-ray to show two radiopaque foreign bodies, one at the level of the hyoid and a second at the end of the fourth cervical vertebra.

was no other associated surface debris. It is assumed therefore that the road stones were secondary missiles generated by the primary explosion and that they possessed sufficient kinetic energy to penetrate the neck tissues where, after six days, an inflammatory response produced the patient's signs and symptoms.

Conclusion

This case illustrated the importance of adequate radiographs when examining "blast injury" casualties.

REFERENCES

1. BRADLEY P F. Foreign bodies in the para-nasal sinuses as a complication of facial injuries. *Br J Oral Surg* 1971; 8: 192.