



AN UNUSUAL INJURY OF THE HAND IN A PLASTIC INJECTION MOULDING MACHINE

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SUMMARY : *Injuries in plastic moulding machines are not uncommon. Usually the hand is caught between the two parts of the closing mould in which the plastic product sets, resulting in severe crushing and avulsion of tissues. An unusual penetrating injury sustained in a plastic moulding machine is described.*

CASE REPORT

A 52 year old right handed male presented with injury to the left hand which occurred whilst supervising the functioning of a ball point pen manufacturing plastic moulding machine.

The hand was impaled by a rod which had entered the first web space and had exited through the dorsal surface of the third intermetacarpal space. The middle finger metacarpophalangeal joint was forced into 45 degrees of flexion and no further passive flexion or extension was possible in that joint (Fig.1).

A skiagram showed the rod traversing the third intermetacarpal space with undisplaced fractures of the base of the second and third metacarpals and widening of the intermetacarpal space (Fig.2).

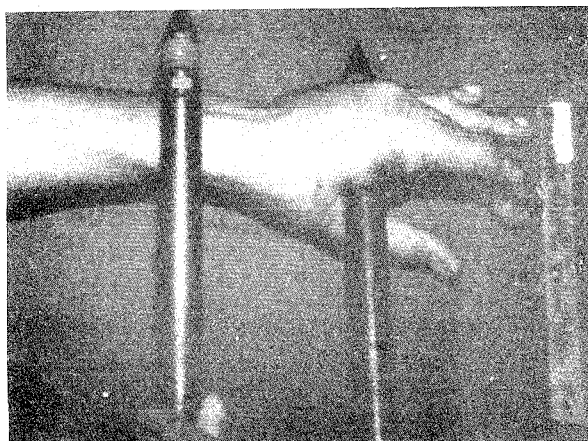
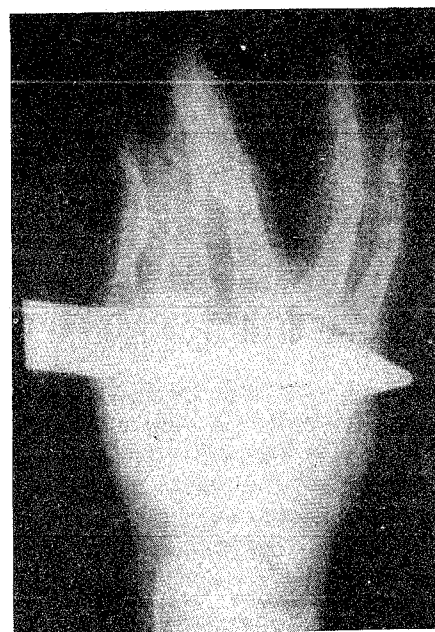


Fig.1 Penetrating injury to the hand. The foreign body shown alongside



(Fig-2) Radiograph of the hand

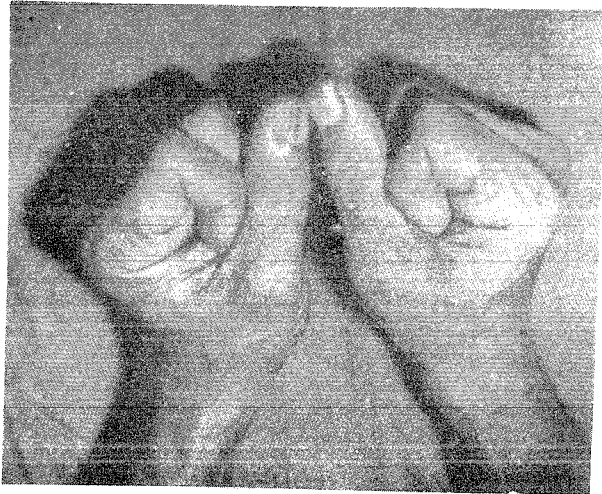
The rod was removed under general anaesthesia, four hours after injury. There was minimal contamination. The deep transverse intermetacarpal ligament was disrupted. The wound was debrided and entry and exit wounds approximated with drains.

He recovered well and had good hand function at 6 months (Fig.3).

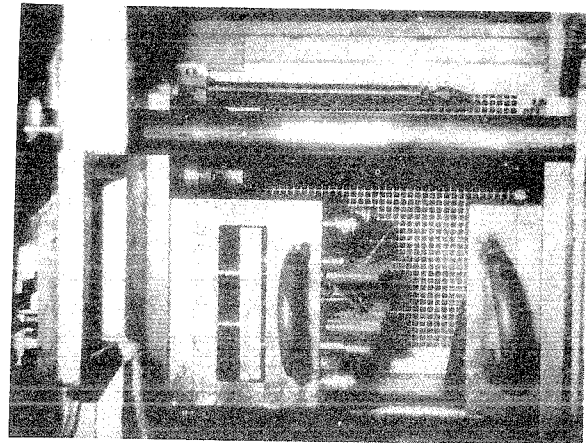
DISCUSSION

The moulding of a plastic product in an injection moulding machine may produce various types of injury to the operator's hand¹.

Molten plastic is injected from an injection unit into the mould. If the hand is placed inadvertently over the injector nozzle, liquid plastic at high



(Fig-3) Postoperative hand function



(Fig-4) Plastic injection moulding machine

temperatures may be forced into the hand causing extensive damage². If the hand gets caught between the two opposing parts of the die as the mould closes, severe injury results. This usually occurs when the operator is trying to manually dislodge the finished product from the open mould and the machine is accidentally activated.

In the patient reported, the hand was inadvertently placed between a mould sensor rod and limit switch. The machine was started on his own instructions and the rod drove into his hand (Fig.4). He had been supervising the working of such machines for 25 years and attributed the injury to carelessness.

Various factors predispose to hand injury. They include poor general health, fatigue, psychological stress, factory conditions of noise, poor lighting, long working hours and the "accident prone" individual³.

Safety measures can be incorporated in the machine to prevent such injuries, such as the use

of a fence guard, use of a manipulating rod to remove the finished product, and complete automation of the process with remote control.

References

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