Penetrating Skull Wound from a Pair of Scissors
Case Report

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Since World War I, the accepted treatment of open craniocerebral wounds has been craniotomy, debridement, and primary closure of the dura and skin. There has been virtually no precedent for "conservative" management. The following bizarre case of craniocerebral penetration is reported because it combined a number of unusual features that made conservative treatment appear less hazardous than orthodox management.

Case Report

A 4½-year-old boy was admitted to the USAF Hospital, Tachikawa, Japan, on September 13, 1960, with a pair of scissors driven deeply into the right side of his head. Two hours earlier he had fallen from the upper tier of his bunk-bed, scissors in hand, and landed on their upturned points. He had never lost consciousness; there had been no incontinence or convulsive seizure. After one frantic, unsuccessful effort to extract the scissors at a local dispensary, he was sent by military ambulance to the Air Force general hospital for treatment.

Examination. The child was lethargic but responsive to the examiner's voice. Vital signs were normal. The handles of a pair of scissors protruded from the right preauricular area (Fig. 1). The right side of the face and head were blood-streaked without evidence of active external bleeding. Facial expression appeared symmetrical. The pupils were equal; the light reflex was present bilaterally, and the extraocular movements were intact. There was no nystagmus, and the optic discs were normal. There was no blood in the mouth, nose, or ears, and Battle's sign was absent. Deep tendon hyperreflexia without clonus was noted in both legs, but the remainder of the examination was normal.

Operation. Under general endotracheal anesthesia, the pharynx was inspected, and a retropharyngeal bulge suggesting hematoma was noted; palpation was avoided in fear of perforating the intact mucosa. Through an oblique anterior cervical incision, the right carotid bifurcation was exposed, and tapes were passed loosely around the common, internal, and external carotid arteries. With arterial blood flow thus controlled but not occluded, the scissors were extracted intact. (Efforts to separate the blades were abandoned because the pivot screw slot was too badly worn for a screwdriver to function; the use of a drill to destroy the screw was judged

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Fig. 1. Patient at the time of admission.
to be too hazardous.) After one application of pliers over a fulcrum of gauze, the extraction was effortless. The patient's vital signs and reflexes were closely monitored and remained unchanged. A right carotid arteriogram disclosed no extravasation, and it was decided not to perform craniotomy. The wound of entry was irrigated and debrided but not sutured, because a parotid gland fistula seemed likely. The neck incision was closed in layers and a full head and neck dressing applied. The patient returned to the recovery room in excellent condition.

**Postoperative Course.** Lethargy predominated for 3 days, but there was steady gradual improvement. Six hours after the operation, the child complained of feeling cold and tried to adjust his blankets. The next morning he accepted oral feedings and on the second day-fed himself. Within 1 week he was participating in full ward play. He was kept on an antibiotic regimen for 10 days and on Dilantin* for weeks. The highest rectal temperature recorded was 100.4°F the day of admission; it was normal after the fifth hospital day. No convulsions or cerebrospinal fluid leakage occurred. There was evidence of dural penetration when an otherwise normal lumbar puncture yielded 1,200 red blood cells per cubic milliliters, 90% of which were created. Postoperative skull roentgenograms revealed no sequestra or retained radiopaque material. The wound of entry healed in 2 weeks. When facial edema subsided, a mild upper facial weakness became apparent. This was of peripheral origin. The child was discharged in 4 weeks and followed closely for 2 years. Repeated examinations including sleeping electroencephalograms remained normal, and no changes were noted in personality or intelligence.

**Discussion**

Most open craniocerebral wounds require craniotomy. Those from vehicle collision are characteristically compound skull fractures, usually with depression of bone and significant dural laceration added to the general intracranial effects of a violent, blunt, head injury. Military surgery is concerned with high-velocity missile penetrations, which deposit foreign material along their paths and produce a zone of tissue devitalization around the missile tract from kinetic energy. Even the less common low-velocity penetrating head wounds usually require operation to elevate depressed bone, remove detritus, or to close torn dura. A number of extraordinary wounding agents have been reported, including high-heeled shoes, sewing needles, toy cars, a scissor blade, a brass slug from a homemade cannon, and a tomahawk, in addition to commonplace weapons like knives, icepicks, screwdrivers, hammers, and hatchets. In all of these reports, there were indications for craniotomy.

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* Diphenylhydantoin (Parke, Davis).
In our case, an unusual combination of circumstances made “expectant” management appear more attractive than orthodox treatment. It was a low-velocity penetration. The sharply pointed slender blade was judged unlikely to have pushed bone fragments along its path, and none was evident on x-ray. The scissors were removed intact leaving no demonstrable residuals. There was no evidence of intracranial hemorrhage either before or after removal of the scissors, and a carotid arteriogram confirmed vascular integrity. The x-rays suggested that the site of dural penetration lay deep in the mid-cranial fossa. The blade could be seen to penetrate the squamos portion of the right temporal bone and course medially below the petrous ridge until its tip lay beyond the midline in the prepontine area.

Although the precise site where the dura was penetrated could not be localized, it was certainly remote from the wound of entrance, probably near the midline. It was judged that exploration of the entire missile tract involved hazards that outweighed any possible gains. No radiopaque residuals could be demonstrated by x-ray. It was elected to defer dural closure and watch for cerebrospinal fluid leak, which did not occur. The possibility of a parotid fistula seemed likely, and for this reason the skin was not closed. In retrospect it would have been preferable to place a small drain in the region of the parotid gland and close most of the skin wound.

Summary

We have described the successful treatment of a penetrating craniocerebral wound with several unusual features which made conservative management seem preferable to orthodox excision and debridement.

References