

Contributing factors to the above conditions are those which impair the blood supply, such as excessive trauma, particularly crushing and bruising of the cancellous bones, and local anesthetics with a heavy adrenalin content.

Time of extraction and correct diagnosis are very important.

Penicillin used in treatment must be used as an adjunct to adequate and prompt surgery, not in place of it, and gives a brighter prognosis than formerly was the case.

## FRACTURES AND DISLOCATIONS OF THE JAWS

**Treatment of 1,000 Jaw Fractures.** Patrick Clarkson, T. H. H. Wilson, R. S. Lawrie. Brit. D. J. 80: 69-75, Feb. 1, 1946; 107-115, Feb. 15, 1946.

Elaborate histories and follow-ups have been kept of 1,000 jaw fractures which occurred during the Tunisian, Sicilian, and Italian campaigns.

Cases have been placed in anatomical groups and special reference has been given to the four major problems of maxillofacial surgery—the influence on rates of union and on the incidence of infection of: (1) time and type of jaw fixation; (2) treatment of the comminuted bone fragments; (3) treatment of the involved teeth; (4) primary soft tissue closure.

The type and cause of injury, the principles of treatment, the early treatment, the intermediate treatment, the late treatment, and the methods of fixation are all described.

The authors conclude that early fixation is desirable because in mandibular fractures the union times and incidence of late inflammatory complications were lower in cases fixed within two days than when fixation was left until later in the first week. They found that splints gave the best fixation but that wire was usually best for early forward treatment. A high proportion of comminuted fractures of the mandible united readily within sixty days when not treated by the very radical bone clearance at primary operation, which has been recently advocated. At primary operation all dead bone should be removed, but all fragments which might live should be conserved. At primary operation for shell wounds only teeth that were loose or easy to remove were extracted.

The cause of death in jaw fractures is discussed in this series. There were thirty-three deaths from all causes. The most common cause was an associated major neurological lesion. The mortality in the pure jaw injury was 1.5 per cent.

**Management of Jaw Fractures.** Lyman T. Barclay, M.D., F.R.C.S.E., Lt. Col., R.C.A.M.C., Stuart D. Gordon, M.B., F.R.C.S.C., M.S.(T), F.A.C.S., Lt. Col., R.C.A.M.C., and H. Hoyle Campbell, M.D., F.R.C.S.E., Major, R.C.A.M.C., Toronto, Ontario. Surg., Gynec. & Obst. 84: 973, May, 1947.

Patients with jaw fractures and associated facial injuries which occurred during World War II to the Canadian Army overseas were centralized in the plastic surgery division of Basingstoke Neurological and Plastic Surgery Hospital, Royal Canadian Army Medical Corps.

Each patient was seen by a surgeon and a dental officer in consultation, and the method of treatment was determined. Fixation was carried out by the dental officer as was the post-operative care. When complications required surgery, it was done by the surgeon with the assistance of the dentist. Tribute is paid to the latter for his work in the operating room and on the wards.

TABLE I. PATIENTS WITH JAW WOUNDS.  
JANUARY, 1944, TO JULY, 1945

	NO. CASES
Mandibular fractures:	
All types	369
Maxillary fractures	236
Mandibular fractures:	
Gunshot wounds	256
Mandibular fractures:	
Simple trauma	113

TABLE II. METHODS OF FIXATION OF MAXILLARY FRACTURES

	NO. CASES
Interdental and intermaxillary wiring	214
Cast cap splints	88
Interosseous wiring	40
External pin fixation	17
Circumferential wiring	1
External angle wire to plaster of Paris headcap or to bar on cast cap splint	14

TABLE III. GUNSHOT WOUNDS OF MANDIBLE

	NO. CASES
Gunshot wounds with ramus fracture	154
Gunshot wounds with condyle fracture	37
Gunshot wounds with angle coronoid fracture	65
Mandibular fracture with bone loss	72
Mandibular fracture with soft tissue loss	20

TABLE IV. BONE GRAFTS IN MANDIBULAR FRACTURES

	NO. CASES
Gunshot wound bone defects; iliac cortical block and medullary chips	70
Simple trauma; cancellous graft	32
	102

TABLE V. FRACTURES OF THE MAXILLA

	NO. CASES
Total maxillary fractures <sup>1</sup>	236
Maxillary sinus "clean-out"	
Caldwell-Luc	75
Maxillary sinus "blow-out"	19
Nonunion of mid third fracture <sup>2</sup>	1

TABLE VI. COMPLICATIONS OF FACIAL WOUNDS

	NO. CASES
Secondary hemorrhage	6
Osteomyelitis	15
Tracheal obstruction (tracheotomy)	34
Gastrostomy required	1
Eye enucleation or evisceration	66
Eye trauma	80

<sup>1</sup>Series of cases January, 1944, to July, 1945.

<sup>2</sup>Union secured with bone graft.

Where reduction was accurate and fixation adequate, fractures healed and were united in six weeks. If infection occurred, union was delayed for an average of twelve weeks. A delay of four days in reduction and fixation gave a marked increase in infection.

Interdental and intermaxillary wiring was the treatment of choice for mandibular fractures.

Where required, bone grafting was done three to four weeks after débridement, and firm clinical union was the rule in six weeks. Penicillin was administered and the complications of bone graft were few.

Maxillary fractures which were uncomplicated were treated with interdental wiring which brought the teeth into occlusion. Others were treated with Paris chin cradle and head-cap connected by two lateral rods adjustable through universal joints. The Gunning splint was also used in selected cases. Where hemorrhage was severe it was controlled with fibrin foam, and in a few cases it was necessary to ligate the external carotid artery. Secondary hemorrhage was rare.

Careful débridement, carefully planned closure of soft tissue wounds, early stabilization of fractures, and adequate penicillin and chemotherapy are stressed.

#### Some Observations on Trismus in Relation to Maxillo-Facial Surgery. G. S. Loader. Brit. D. J. 81: 193-196, Sept. 20, 1946.

The main causes of trismus which the author saw at the E.M.S. Maxillo-Facial Unit at Gloucester were fractures of the jaw at the angle, ascending ramus, condyles, and coronoid processes of the mandible with injury to the surrounding muscles and ligaments which are repaired by scar tissue.

He believes that where the coronoids or condyles are fractured, ten to fourteen days are sufficient for immobilization.

In restoring normal movement to the jaw, the problem is to overcome the contractile power of scar tissue both in and around the muscles.

The patient should be encouraged to exercise his jaws either by chewing gum, a cork-screw trismus gag, or an elastic exerciser. The exerciser stretches and softens the scar tissue and also re-educates the muscles. Cast-metal splints are required for both jaws, with small