AN INAUGURAL DISSERTATION
ON

Fractures

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BY
Washington Williams
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Fractures

A fracture is a solution of continuity of parts produced by external violence, by muscular contraction, or by the action of both. Fractures may be divided into transverse, oblique, and longitudinal, according to the direction in which the bone may be broken.

A simple fracture is nothing more nor less than a mere separation of a bone into two parts; a compound fracture implies an open wound communicating with the fracture. It is comminuted when the bone is broken into numerous fragments, and it
is said to be complicated
who attended with laceration,
and laceration of large blood
vessels.

Causes. The causes that most
frequently produces fractures
of bones may be divided
into predisposing, and exci-
ting. The most frequent
cause that predisposes a bone
to be fractured is that of old
age in the decline of life. The
bone becomes fragile or brittle.
The earthy matter becomes de-
picient, in quantity and the
animal matter looses its elas-
ticity.

The exciting causes are mechan-
ical violence, and muscular
contraction, mechanical violence may be direct or indirect; it is direct when it produces a fracture at the part to which it is applied, and indirect when a force is applied to two portions of a bone, and it yields in the middle.

Reparation. The reparation of a fracture is produced by the effusion and the organization of lymph. When a bone is broken, a quantity of lymph is effused into the cellular tissue around the broken ends, and in two or three weeks it becomes converted into a cartilaginous capsule, called provisional callus. This completely sur
rounds the fracture, and adheres firmly to the broken bone.

Symptoms The most prominent symptoms of a fracture are deformity, pain, unnatural mobility, crepitation, pain, swelling and helplessness of the part; sometimes a shortening of the limb if the fracture is in an extremity, inability to move the limb without some pain at the injured part, inequality of the skin. But of all the symptoms that I have assigned to fractures that of crepitation is the one which the surgeon should rely upon the most. He should take hold of the limb above and below the fracture.
part and by moving the extremity he will be able to produce this sound beyond all doubt. If the surgeon should not be called in until swelling and inflammation and ecchymosis have taken place, he should wait until these symptoms have all subsided.

In judging the prognosis of a fracture there are many circumstances which the surgeon may depend upon. If the bone of an old person should happen to be fractured it will take much longer time to unite than if it were the bone of a young person. A healthy condition is much more favourable, than that of
a valetudinarian. The surgeon should know the degree of violence the mode by which it was applied. These circumstances greatly influence him in making his prognosis.

Fractures produced by the discharge of a gun are always dangerous a portion of the being destroyed by the force of the ball. In this case it must be foliated before the sound bone can granulate and reunite. A compound fracture is always more dangerous than a simple one. Unattended these symptoms an oblique is more difficult to manage than a transverse fracture.
fractures of superficial bones are less dangerous than those which occur in bones that are more deep seated and covered with strong muscles: a fracture in the middle of a bone is less dangerous than at the extremity in the vicinity of joints. The seasons of the year, and many other circumstances will no doubt affect the healing of broken bones.

Treatment. In the treatment of fractures the first thing that is to be discussed is the apposition of the broken ends of the bone. They are to be brought into as exact contact as possible; but this should not be attempted un-
Till the splints are all ready to be applied; the fractured bone must be kept in a steady position for every motion of the wound injures the soft parts, and produces an irritable state of the muscles which is apt to cause subsequent displacement of the bones.

The treatment of fractures is the same in principle as that of wounds. The patient should be placed in an easy position in which he can remain without any material inconvenience till the dislocated parts are firmly united.

The position of the limb which is called a relaxed position has
been sought for, and is generally enjoined. In the position so denominated a limb may certainly be kept for a long time without inconvenience. The patient indeed is accustomed to it.

The fore arm is generally placed upon the arm, the thigh upon the pelvis, and the leg upon the thigh, although in these positions some muscles are relaxed and others are put upon the stretch. So that the term relaxed position is objected to by some, but such a position is easy, and natural, and may be long continued without disquiet.

The means which are employed for bringing the ends of a frac--.
Torn bone into apposition are retention, and counter traction. This should be continued until the ends are brought in direct apposition.

The limbs having been previously laid in an easy posture, resting upon a suitable splint, the surgeon generally succeeds without any difficulty in accomplishing the end in view. When he has brought the ends of the bones in apposition, the means to be employed are splints and roller bandages.

The splints that are to be applied to the fracture should be long enough to confine the bone in a steady position, to prevent
The bone from growing out of its natural shape. The splints must be adapted to the shape of the limb, so as to give equal support to the whole surface to which they are applied. Splints should never be placed next to the surface, but be well and softly padded before they are used to prevent irritation. This may be done by laying several folds of flannel or patent lint upon them when the splints are gently placed upon the broken limb. The whole compress should be enclosed with a bandage. The best that are employed are made of calico or white domestic.
The bandage must be from two and a half to three inches in width, and from three to five yards in length. When a bone of an extremity is fractured, the surgeon should commence bandaging it at the extremity and roll it above the point of fracture to prevent swelling. When inflammation comes on it should be treated on the antiphlogistic plan under this treatment the inflammatory symptoms will soon subside, and the treatment is to be discontinued as it has a tendency to lessen the action which is essential to the reparation of the wound.

As it appears that a degree of
vigour of action in the vessels is necessary for the process of ossification it is generally wrong to abstract blood, or to insist on the careful observance of a low diet. The length of time required for a fractured bone to become strong and unyielding is varied in children, in some instances strong union will take place in ten, or fifteen days, whilst in some adults it will take from one to six months, for it to become complete, so as to support the weight of the limb or body. The only means by which the surgeon can judge of the firmness of the union is an examination.
should never be too forcibly; when one moving one end of the bone to follow the motion in a corresponding manner the union is complete.

The leaving off the splints, and a slight degree of exercise together with gentle friction to the soft parts is necessary.

In fractures of an extremity the patient should never attempt to use the limb before it firmly unites; if he does it will cause it to be somewhat shorter than the corresponding one. As the motion lifts state of the fractured bone is the most important circumstance conducting to the reunion, gravitation seems in
every instance to be necessary and of great importance; cases sometimes occur in which fractures do not heal by ossification, but by ligamentous union, a bone that has persistium will not unite by long union: when this is the case motion is always at the place of fracture, thus a joint is formed which destroys the use of the limb, and the patient is exposed to great inconvenience, after the lapse of two months or more without solid union it becomes necessary to excite inflammation, by rubbing forcibly the fractured ends against each other, after which the dressing should be reapplied.
and the parts kept in a steady position.

When large blood vessels are injured in a fracture, they should be cut down to and ligated. The constitutional treatment of fractures must be regulated by various circumstances. When inflammation attends, which is an essential part of the process of restoration, if it be too violent the surgeon must restrain it by the usual remedies. Cathartics in many cases are extremely inconvenient in consequence of the motion to which it gives occasion. Blood letting is to be preferred as this mode of evacu-
ation is not liable to the same objection, and the bowels are to be kept from constiveness unless in those cases in which absolute rest is most required and the patient on the contrary is permitted to walk as fractures of the humerus and clavicle but a bow diet should be observed