Wounds.

Definition.—A recent solution of continuity in the soft parts suddenly occasioned by external causes, and attended at first by more or less hemorrhage.—(Cooper.)

Objections to this usually accepted definition.—A wound may be produced by violent action of the muscles alone; and by the protrusion of a fragment of bone. We may also have a wound occurring in bone.

Classification of wounds.

First division.—Is based upon the nature of the instrument inflicting the wound. Thus we have incised, punctured, lacerated, contused, and gunshot wounds.

Second division.—Is based upon the introduction of some venomous morbid or putrid matter, into the wounded part. Hence we have poisoned, specific, and dissecting wounds.

Third division.—Is based on the regions or parts involved. Thus we have wounds of the head, face, chest, abdomen, &c.

Fourth division.—Wounds are also divided into the simple and complicated.

Dangers of wounds.—These depend on—1st, the size or the extent of injury; 2d, the weakness or strength of the parts involved; 3d, the importance of the organ; 4th, the size of the bloodvessels involved; 5th, the kind of vessel (artery or vein:); 6th, the diathesis of patient; 7th, the age of patient.

Causes of death.—1st, hemorrhage; 2d, tetanus; 3d, traumatic fever; 4th, erysipelas; 5th, hectic fever; 6th, gangrene; 7th, metastatic abscess.

Process of healing.—Until recently, only two methods described; union by the first intention, and union by granulation, or the second intention. Professor M. Cartney has established the existence of two others, and we may therefore make four different processes of union, viz.:

1. Immediate union.
2. Mediate union by lymph or blood, or union by the first intention.
3. Union by the modelling process.
4. Mediate, by granulation, or by the second intention of Hunter.

Objections to Cartney’s views.

Mode of organization of the lymph and blood.

Difference between Hunter and Cartney relative to the necessary presence of inflammation in the healing of all wounds.

Comparative advantages of the different modes of union.

First and second should generally be attempted; because whether either takes place we save time and pain, and obtain a strong and generally but slightly deformed cicatrix.

State the objections urged by many of the French authors and others against these two modes of union in large wounds.

Circumstances preventing union by the immediate or mediate processes.—Divided into 1, constitutional; 2, local.

First or constitutional.

1. Bad habit of body.
2. Diseases of various kinds.
3. Simple fever.

Wounds not healing badly.
4. Vitiated atmosphere in hospitals, &c.
5. Epidemic influences.

Character of the tissue by which wounds are united.—Already alluded to. It is a singular fact, that with the exception of bone, all tissues unite by a substance different from themselves.

The different classes of wounds may next be considered; and first of

INCISED WOUNDS.

Definition.
Extent and direction.—Always to be regarded.
Characteristics.—Pain, gaping, hemorrhage.
The pain is owing to lesion of the nerves; the gaping to the ordinary elasticity and contractility of the parts, and also to the situation of the wound. The hemorrhage proceeds from a wound of an artery, or vein, or both, and its character is modified accordingly. State these modifications. Its activity is dependent upon the character of the wound, and the size of the vessel.

Prognosis.
Treatment.—General indications.
1. Arrest the hemorrhage.
2. Remove foreign bodies.
3. Approximate and retain the sides of the wound in contact.
4. Prevent or subdue inflammation.
5. Protect the wound from injury by appropriate dressings.

First indications.—Hemorrhage may be arrested either by an effort of nature, or by the assistance of the surgeon. Explain the process by which the bleeding is spontaneously arrested. We are not to wait for this, however, but must resort to the various agents afforded by our science. These are numerous, and are to be modified or varied according to circumstances.

1. When the vessel is deep and beyond our reach,—as in wounds of chest, abdomen, &c.—our best remedies are bleeding, digitalis, cold, rest, low diet, and positive quietude of mind.
2. When the vessel is accessible, we may resort to
   a. The ligature.
   b. Torsion.
   c. Machure.
   d. Refoulement or, reduplication.
   e. Compression.
   f. Refrigerants.
   g. Styptics.
   h. Suture.
   i. Plugging.
   j. Seton.
   k. Acupuncture.
   l. Electro-puncture.

The most important of these agents is the
LIGATURE.

History.—Mentioned by Celsius; but not generally employed until the time of Paré.

Effect on an artery.

Effect on a vein.

Changes which take place in the blood contained in the vessel.

Changes which take place in the vessel itself.

Manner in which the ligature is discharged.

Cause of danger when the ligature comes away.

Time required for the obliteration of the vessel.

Materials of which ligatures are usually made.

Shape and size of ligature.

Mode of tying the ligature.

Method of applying a ligature.—Depends on the location of the vessel.

1. When the vessel opens on a surface, as in the wounds of amputation, &c., we require a tenaculum, or artery forceps.

2. When the vessel is deep-seated, or when we wish to cast a ligature in the course of a vessel, as in aneurism, we may use the various aneurismal needles, or a bent probe. Objections to the needles. In all large wounds it is well to apply a ligature to both ends of the vessel.

Subcutaneous ligature.

Ligature d’attente, or ligature of reserve.

Scarpa’s ligature.

Ligature and section of the vessel.

Temporary ligatures.

TORSION.

Definition.

History.

Arteries to which it is considered applicable.

Mode of performance.

Objections to its employment.

HACHURE.

Definition.

History.

Arteries to which it is considered applicable.

Mode of performance.

Objections.

REFOULEMENT, OR INVERSION.

Definition.

History.

Arteries to which it is considered applicable.

Mode of performance.

Objections.

COMPRESSION.

Importance.—Useful either as a temporary or permanent agent.

Points upon which it may be applied.—Either directly upon the bleeding surface, or at some distance from it.

Class of wounds in which it is most useful.—Wounds of extremities, or over bones and firm tissues.

Agents of compression.—1st, compresses; 2d, rollers; 3d, hand of assistant; 4th, tourniquet; 5th, garot; 6th, tissue itself.
REFRIGERANTS.
Cases to which they are applicable.
Agents usually employed.—Cold air, cold water, ice, &c.

STYPTICS AND ABSORBENTS.
Cases to which they are applicable.
Agents usually employed.—Salts of the metals, krestote, sponge, agaric, lint, cobweb, dry powders, &c.

CAUTERY AND CAUSTICS.
Cases to which they are applicable.
Heat at which the cautery should be applied.
Agents employed.—Metallic bodies of different shapes, mineral acids, argent. nit., &c.

SUTURE.
Mode of application.
Cases to which it is applicable.

PLUGGING.
Cases to which it is applicable.
Manner of applying it.—Speak of Sarra’s proposition to “plug the artery” in ordinary hemorrhage.

SETON.
Mode of application, &c.

ACUPUNCTURE.
Mode of application, &c.

ELECTRO-PUNCTURE.
Mode of application, &c.
Manner in which the circulation is carried on in a limb, after the obliteration of a large artery.

SECOND INDICATION.—Having arrested the hemorrhage, the next indication is to remove foreign bodies.
Character of these, generally speaking. Should coagulated blood be considered a foreign body?
Manner of removing these bodies.

THIRD INDICATION.—The next indication is to bring the sides of the wound in contact, and retain them in this position.

Agents employed to fulfill this indication. 1. Position. 2. Sutures of different kinds. 3. Adhesive straps. 4. The rollers. 5. Splints.

FOURTH INDICATION.—Protecting the wound from injury, is the next indication.
Agents employed to fulfill this indication. Much more simple at present than formerly. The lighter the dressing the better, when we wish union by the first intention. Cold water dressing. When union by the second intention of Hunter is desired, the best top dressing is the “warm water dressing,” or poultice.

FIFTH INDICATION.—To fulfill this indication, antiphlogistics, both general and local are usually required.

LACERATED WOUNDS.
Definition.
Causes.
Characteristics.
Prognosis.
Treatment.—General indications.
1. Arrest the hemorrhage when it exists.
2. Attempt, if possible, union by the "immediate or mediate" processes.
Mode of dressing to accomplish this. Irrigation and water dressings.
3. When suppuration takes place, promote the secretion by a poultice, or warm water dressing.
4. Keep down inflammation at first, but when suppuration is profuse, support the constitution.
5. When the extremities are involved, the question of amputation may occur.

**CONTUSED WOUNDS.**

**Definition.**

**Causes.**

**Characteristics.**

**Prognosis.**

**Terminations.**

**Treatment.—General indications.**

1. When the contusion is complicated with a wound of the integuments, close the latter as soon as the hemorrhage (where it exists) is arrested, and foreign bodies removed.
2. Keep down inflammation by antiphlogistics, both local and general.
   Dress lightly, &c.
3. In severe contusions, it is often necessary, at first to stimulate the patient, but this should only be done when the prostration is great.
4. After the inflammation becomes chronic, or when the blood is not readily absorbed, use stimulating frictions, bandages, &c.

**POISONED WOUNDS.**

**Definition.**

**Causes.**

**Characteristics.**

**Prognosis.**

**Treatment.—Depends on the character of the cause.**

1. When they are produced by the sting of insects, the remedies are—cold applications, volatile alkali, saline solutions to the part affected; and occasionally bleeding, diet and purgatives are required.
2. When they are produced by the bites of venomous or rabid animals, the remedies are a ligature above the wound, excision of the part, cupping,
or suction of the wound, caustic poultices, and often constitutional remedies, according to the condition of the patient.

Dissecting wounds are best treated by suction, caustic, leeches, a blister above the wound, a poultice or cold to the part, and constitutional remedies according to circumstances.

Rabies.

Definition.

Causes.

Time of appearance after the reception of the injury. 8-12 weeks.

Symptoms.

Pathology.

Diagnosis.

Treatment.

GUN-SHOT WOUNDS.

Definition.

Varieties.

Characteristics.—Constitutional and local.

Wound wounds.—How produced.

Gun-shot wounds usually contain foreign bodies.

Pathology of the wound.

Treatment.—Several indications. Modified by nature of wound.

1. Attend to general condition of patient, at the time the wound is received.

2. Arrest the hemorrhage where it exists.

3. Examine wound.

4. Remove foreign bodies, if possible.

5. Dress the wound. Cold application should first be tried, and if these fail to afford relief, apply warm or hot.

6. Guard against secondary hemorrhage.

7. Prevent the forming of pus.

8. Prevent inflammation if necessary by antiphlogistics.

9. Support the general health if necessary after suppuration is established.