On some of the accidents attendant on surgical operations.
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The word accident signifies in medicine any unusual or unexpected event that may arise and prove an exception more or less to the ordinary course of things, and which consequently demands special attention and proper precaution both for the purpose of diminishing the inconveniences it may occasion, or for the purpose of applying the necessary remedies.

We will then take notice of some of the unusual or unexpected events which often times complicate surgical operations: but as these operations are very numerous and always are being performed in parts very different from each other, as regards thickness, texture, and function that the accidents which are likely to arise are different, as endless as different from each other as the very operations themselves; we cannot therefore speak of each of them, so we purpose giving a short sketch of two or three of the more important ones, without however, entering into the treatment of each one of them as to do so would occupy more time than can at present be spared from other professional studies.

We will speak of them.

I. Nervous accidents or shocks.
II. Hemorrhage.
III. Inflammation.
Firstly as regards nervous accidents. The functional derangements which may take place in the nervous centres after operations are—dyspepsia, delirium, spasm, convulsions, locked jaw, etc. There are numerous circumstances to account for the causes of such accidents: for instance sex, age, constitution, etc., and after as has a great influence in being absolutely producing them. Women are more liable to accidents of this nature than men. Persons of a nervous temperament are more liable to be attacked by them than those of a phlegmatic temperament. Again, children more so than adults. Persons broken down in constitution, or weakened by illness, grief, excesses and many other unhappy circumstances, afford more frequent examples than those who enjoy the comforts of a sound mind and body.

I believe that this assertion is admitted that it is a notorious fact that operations do not terminate as favourably in the case of those patients, who at the time of the operation are labouring under great fear, or in the case of those who are absorbed in thought concerning concerning some grevious calamity and who consequently display an utter indifference to their situation, both as regards their present sufferings and the final result.
I fancy there are very few of us who have not experienced at one time or other the truth of the following statement:

"That, though the confidence and assurance are highly favourable to the resolution of numerous diseases, while fear and a foreboding of evil seldom fail to aggravate the most simple maladies and often render them fatal."

In this subject we find also military surgeons stating that amputations were scarcely ever known to terminate so unfavourably as they did at the disastrous retreat of Moscow, where so many misfortunes befell the French army.

The seat of an operation must also be taken into account in the consideration of nervous accidents, for such accidents are of frequent occurrence from the very fact that operations are performed on regions organs rendered most remarkable from the arm for the number, size, and sensibility of the nerves distributed therein.

One in particular of the accidents to which I have alluded is worthy of our attention chiefly on account of the fatal result which almost always attends it — refer to tetanus or locked jaw.

The term tetanus is used to denote a disease the principle feature of which is long continued contraction or spasm of a greater or less number of muscles usually under control of the will, with stiffness, considerable rigidity of the
contracted joints and accompanied by violent pain. This terrible disorder most fortunately somewhat rare in our own climate as a consequence of operations occurs more frequently in tropical regions often as the result of the slightest wound: and as an instance of how slight an injury may occasion this fearful disease I may mention the following.

A young lady residing in a town in India on attempting to break a small piece of wood with her foot caused a nail to start from it which unfortunately struck her on the palm of this hand, causing rather severe pain at the time and a small wound to all appearances insignificant. In a few days however, the symptoms of tetanus came on. A slight stiffness was at first felt in the muscles of the jaw and throat, trismus or locked-jaw became evident and the tetanic symptom soon extended themselves.

Tetanus has been observed to take place soon after the operation for fistula in ano, nasal polypus, and has been proved fatal in a case resulting from the introduction of an iron.

The causes of this disorder are chiefly due to exposure to cold, to very high or very low temperature, sudden change of weather, bodily injuries, and not unfrequently from the influence of cold on the body when in a state of perspiration.
Traumatic tetanus is most frequently caused by a general feeling of indisposition and a kind of uneasiness which the sufferer. Suppuration of the wound speedily diminishes and lastly ceases altogether: the flesh becomes swollen and dry up—being at first of a reddish colour and afterward becomes streaked as it were. These phenomena are accompanied by sharp pains which increase whenever the patient comes in contact with external objects of any kind. The pain gradually spreads into the regions of the nerves and tendons: the whole of the affected part becomes painful and the wound inflamed, the muscles undergo convulsive contractions attended or preceded by cramps and twinges in the tendons: muscular irritation rapidly extends from the muscles nearest the wound to those most distant, which become strongly contracted and grow stiff, or else it is suddenly transferred to the muscles of the jaw and throat where it becomes concentrated, and the latter draw nearer and firmer together, so as to admit of little or no separation. Swallowing now becomes very difficult and after a time quite impossible in consequence of the forced contraction of the Pharynx and Oesophagus.

In cases where cold contributes to the development of tetanus, the irritation communicated by the
by the wound to the nervous system is doubtless increased by the suppression, which produces its effects in the different organs and more especially on the part or parts already affected:—but generally all the irritation is concentrated from the commencement of the disorder or subsequently in the muscles of the jaw and throat. The patient then displays— if not a great dread of liquids atleast a great repugnance to them which often prevents the administration of any internal remedies. We can seldom overcome the obstacles to be met with in the alimentary canal. We might endeavour to introduce assistant through the nostrils and even tho' it be done most skillfully it will in all probability bring on convulsions and suffocation.

Such is the most common variety of tetanus to which the term torpor is applied: but when it becomes general all the muscles are attacked at the same time.

The eyes become are capable of very slight motion and soon become fixed in their sockets, the face colours up, the mouth becomes twisted, and the head inclines variously according to the species of tetanus. The secretions diminish and eventually become completely suppressed, especially the stools. The breasts shrink; the contractions of the diaphragm become limited, respiration is short and painful. the contractions of the heart frequent and impercepti
The central functions, however, remain intact up to the last moment, so that the patient suffering from this disease is conscious of his approaching end whilst exposed to the most acute agonies.

It is worthy of remark that the mental faculties as a rule remain unaffected in this disorder: delirium or disturbance of the intellect seldom takes place: these symptoms seem to appear (if they indeed themselves at all) when other signs of the failure of life come on.

As we may easily understand in some cases the patient cannot enjoy the comforts of sleep as he is agitated, and undergoes the most severe anxiety until death relieves him from this torture.

The progress of the disease is of so rapid a nature that generally within twenty-four hours after the first signs of the attack come on the patient is unable to swallow or does so with the greatest difficulty: his pulse and respiration are quickened, and profuse perspiration frequently breaks from the pain and anxiety that he is undergoing. He becomes visibly thinner, the muscles become intensely stiff, swallowing can no longer be accomplished, the symptoms gradually get more and more alarming and without the loss of his mental faculties the patient dies within the third, fourth, fifth or seventh day—rarely
rarely does he live on until the tenth day. There are cases, however, reported of persons lingering on to the 30th and 34th days.

Death is almost certain to be the termination of traumatic tetanus and all treatment generally in the end, it must be confessed, is useless.

Death may take place in a variety of ways, but is usually due to suffocation, more or less slow, brought on by the suppression of the action of those muscles which regulate the organs of respiration: but when this disorder is prolonged for a number of days without being very violent the patient appears to be carried off by exhaustion rather than suffocation.

Though this disorder generally terminates fatally, notwithstanding that the patient be watched and attended by the most eminent members of our profession, yet we find authors who state that cases have come under their notice which have resulted favourably.

Baron Barry in his memoirs of military surgery relates a case of this kind.

Peter Bonnet 21st 20 of a bilious and irritable constitution was languishing in the hospital at Cairo, after the Campaign of Syria, from the effects of a fistulous ulcer with caries of the bones forming the right tibio-tarsal joint of the foot. In consequence of the sequestration of the part and the declining state of the soldiers health it was deemed necessary
necessary that the foot should be amputated. Accordingly, the operation was performed. The success was not endangered by any eventuality. injunction established itself in the ordinary course of time and the wound assumed a healthy appearance. In two days the exudation began to form all around the wound and gradually to extend towards the centre. When just as the patient was sitting into the convalescent stage he imprudently exposed himself to the night air being at the time in a profuse perspiration. Shortly afterwards he was seized with the symptoms of tetanus. The surgeon in attendance immediately ordered him a diaphoretics, liniment apis, and dry rubbing and friction all over his body. Notwithstanding, however, the symptoms of tetanus advanced with their usual velocity. The sufferer complained of scoriating pain in the epigastrium and imperceptible twichings in the limbs that had been operated upon. His breathing became troubled, dysphonia difficult. His jaws closed firmly, his head bent down over his chest, his body curved and rolled together like a ball. In a word, he was afflicted with that form of tetanus called Emprosphalanges. The surgeon then administered to the patient, through a gap caused by the loss of two of the incisor teeth, anaodyne and antispasmodic emulsions which after a short time alleviated the patient's sufferings.
A large blister was applied to the circumference of the stump which caused suppuration to be established in the course of twenty-four hours; a small eruption manifested itself also on the face and breast. From this hour the patient began to improve, the symptoms of tetanus gradually disappeared, the normal functions of the body were restored and on the thirty day after the operation the patient left the hospital completely cured.

Barron Dancey relates another case in which a soldier at the siege of Cairo was compelled to have his arm amputated in consequence of a severe hurt from a cannon ball. The patient progressed favourably for the first few days after the operation, but on the seventh day he unfortunately exposed himself to the cold night air, having previously been confined to a warm room, whereupon he was seized with tetanic symptoms, no doubt brought on by the sudden change of temperature to which he rashly exposed himself. A fly blister was applied to the wound, diaphoretics administered and one strong dose of Chlorid Camphor at prime. The attacks soon began to diminish in frequency and after a time they entirely subsided and the patient made a good recovery.

Sir Gilbert Blane tells us that, in the West Indies in 1782, 30 cases of tetanus came under his notice, 17 of them died.
A large blister was applied to the circumference of the stump which caused suppuration to be re-established in the course of twenty four hours; a small abscess manifested itself also on the face and breast. From this hour the patient began to amend, the symptoms of tetanus gradually disappeared, the normal functions of the body were restored and on the 60th after the operation the patient left the hospital completely cured.

Hemorrhage. The flowing of blood after an operation may take place by an oozing from the capillaries or by a gush, that is to say an effusion more or less voluminous, either from an artery or vein alone, or from both these sources at the same time.

We find numerous causes both morbid and physiological to account for this accident. Age exercises a certain influence in the production of hemorrhage. In children oozing from some of the smaller capillaries is of frequent occurrence and is sometimes attended with great danger.

Persons arrived at an advanced age are often troubled with venous hemorrhage so much so as to occasion great alarm, for in old persons the venous system is developed in a remarkable manner.
We frequently notice as a cause of this accident the morbid state of the coats of certain arteries—
for instance, carotid arteries and inflammation has taken place in them—and renders them liable to be cut by the ligature which is intended for binding them, thus the means employed for the obliteration of the arterial duct has not time to affect the closure of vessels, and hence arise those serious hemorrhages which will often occasion the death of the patient unless and effectual means for stopping the flow be applied.

The part on which we are going to perform our operation undoubtedly has a great influence in causing this accident: regions abounding in blood-vessels are necessarily more exposed to it than those partaking of a less degree of bascularity.

The pathological state too of the part to be operated upon often gives cause to apprehend hemorrhage. Thus in some cases where the tonsils have been excised a very copious hemorrhage has taken place without any other vessels being divided, but those of the hypertrophied organ; the vessels become more voluminous as a consequence of the disorder itself.

This excessive hemorrhage may also occur even when the operation is performed on sound tissues.
tissues, therefore, after an operation the important
arteries are ligatured; however, a number of small
vessels whose oriﬁces may have been contracted at
the times from the sufferings of the patient, or
from being in contact with the air and from
the retraction of the muscles, may, on the
patient being restored to rest and quiet, that is
after reaction has taken place, produce an
alarming amount of hemorrhage; and thus it
is why some surgeons in order to prevent this
accident have made it a rule not to allow
the proper dressings to be applied until four
or six hours after the operation.

Finally as a cause of hemorrhage we may mention
certain general conditions or peculiarities of the
system.

Some persons cannot undergo the slightest operation
without experiencing very serious hemorrhage; this
may occur even in the extraction of a tooth.

Persons suffering from the effects of fever or who
have been weakened by a great loss of blood, are
frequently, after an operation, troubled with
hemorrhage, which is often times checked with
the greatest diffiulty.

Sometimes hemorrhages seem to be hereditary.

Liﬂandez relates in his work a remarkable case
of a man, who found it extremely diffiult-
Whenever he received the slightest scratch to stop
the hemorrhage that ensued. He was moreover
troubled with bloody exhalations alternately from
the nostrils, pharynx, lungs and intestinal canal.
He finally succumbed to this disorder: and Seipran
assures us that several members of this man's
family suffered to the same degree from
this disease.

The symptoms of this kind of hemorrhage are characterized
by an external flow of blood, which may be
red or of a darker colour, according as it
proceeds from an artery or vein. The quantity
varies ad infinitum; it may amount to only a few
drops or to several pints.

Hemorrhage is always accompanied by great
derangement of the system: it produces
weakness, which depends, however, on the quantity
of the blood lost and the rapidity with which
it flows. Should the quantity be moderate and
and the subject robust and in good health
there will in all probability be no harm
attendant on such an accident, but if the
hemorrhage be copious, it gives rise to palor
of the countenance, diminished contractility of
the muscles, feeble pulse, a cold feeling in
the extremities, and at a still more advanced
stage, it produces giddiness, tingling in the
The same, cold sweats, panting, syncope and
unless checked in time death must result.
The danger resulting from hemorrhage cannot
be calculated in a positive way. The amount
of blood lost by a patient, for the loss of
blood which has occasioned the death of
some persons has proved of very little consequence
to others. Hence we should always take
into consideration the strength of the
individual that has been operated upon, and
above all the weakening effects also which
arise from the length of the operation and
the severe suffering that in many cases the
patient is compelled to undergo previous to
the hemorrhage that may often times occur.
Certain hemorrhages derive importance from
this region may first show themselves in.
For instance, those which occur after certain
operations about the throat may bring on
the most fatal results in consequence of
the blood entering the respiratory passages
as sometimes occurs in the operation of
tyrocholecotomy.

All such accidents may occur at various
periods; thus we speak of primary and
secondary hemorrhage according as it shows
itself immediately or a short time after
after the operation: — the former is of little importance unless it be connected with the general state of the system: — it is the latter that is so dangerous and causes so great apprehension for the patient's life. It may arise from different causes and among others the inefficacy of the ligature. It sometimes happens if along with the artery a number of the soft parts have been included by the ligature and thus when they begin to suppurate the ligature gets released and soon proves useless. In other occasions when the artery alone even has been secured it may be cut through before the vessel is completely closed. This accident is to be apprehended as the ligature may be tied too lightly or, more especially is it likely to happen if it be applied to an artery the walls of which are already diseased. Periods at which secondary haemorrhage may occur. It may come on at any time between the application of the ligature and the closure of the wound. There are, however, three periods at which surgeons consider it particularly apt to take place: — I. A few days after the application of the ligature. II. About the separation of the
the separation of the ligature and it at an indefinite time after it has separated. The very long time that occasionally intervenes between the separation and the coming on of the haemorrhage is very striking. Mr. South mentions a case in which the subclavian artery was tied, the ligature came away on the twenty-seventh day and the fatal haemorrhage occurring on the thirty-third went.

Inflammatory accidents.

Of all the evils attendant on surgical operations inflammation is the most frequent, whether it takes place in the parts immediately concerned in the operation or in their neighbourhood. It is continually the object of treatment and watchful care of the surgeon. All persons furnished with a large supply of blood are subject to it and it affects the parts in various ways; and as Dr. Watson truly remarks "a great majority of all the disorders to which the human frame is liable begin with inflammation, or end in inflammation or are accompanied by it during some part of their course, or resemble inflammation in their symptoms."

Most of the organic changes of different parts of
of the body recognizes inflammation as their cause or lead to it as their effect and the premature death of persons is more often owing to the serous, immediate or remote, of inflammation than to any other morbid condition whatever. Inflammation following surgical operations may be merely of a local nature or it may affect cause constitutional disturbance.

Every wound, however, small during the process of healing is attended by a certain amount of local inflammatory action and if this inflammatory action be excessive in its character the constitutional symptoms will also be aggravated, and therefore it is one of the utmost consequences as regards the favourable result to avoid all circumstances which may render this action excessive in the wounds after surgical operations.

Excessive inflammatory action may be limited in such wounds to the surface of the wound itself and its immediate neighbourhood or it may extend for some distance all around the wound and may even spread over a considerable part of the body, as is seen in Erythema and Enysepela. If this action in surgical wounds be not early checked it may very soon pass on to blushing.
sloughing and gangrene) and when this does happen the constitution will most undoubtedly suffer to a very considerable degree - the heart's action becomes accelerated, heat of skin becomes excessive, the digestive functions are soon disorders etc.  

We should also remember that in different patients this inflammatory action differs in degree very much. In some persons wounds do not heal without a great deal of inflammation both local and constitutional. Whilst in other individuals these symptoms are very slight. 

Inflammatory reaction around a wound may often depend on the tension caused by the confinement of pus or blood on by the edges of the wound being brought too tightly together. Special care ought therefore to be taken (especially in wounds where there is sinew and in amputations) to prevent any accumulation of fluids between the edges of the wound when this does occur for such fluid should be immediately evacuated either by a division of two or three of the stitches which keep the lips of the wound in apposition or by an incision if necessary.
The division of a single stiletto in a wound when there is much tension or redness will often be alone, followed by a disappearance of these symptoms. Erysipelas and lymphema generally commenced in the wound and may then spread gradually from the wound to other parts near or having once begun in the wound they may attack other parts in the neighborhood. Now, the inflammation quickly disappearing from one point only to return at another until it has died itself out as it were. Erysipelas coming on after an operation may be followed by secondary abscesses and even in some severe cases by sloughing. This is especially seen in Erysipelas which attacks the deeper structures. There is also much difference in the amount of constitutional disturbance in different individuals. In wounds of large size there is always more or less derangement of the whole system. This is shown by the quickening of the pulse, thirst, and other symptoms of febrile action. In favourable cases this passes off in a few days and provided the local symptoms are good we need
The great cause, however, of alarm in surgical practice is what is called surgical fever or pyaemia. Many theories have been advanced as to the nature causes of this frightful disease, but perhaps the best and most convenient view to take of it is that it is caused by some poison entering into the blood, which is accompanied by a series of severe constitutional symptoms and generally leads to a fatal result.

These attacks of inflammation, with more or less severity, especially after the amputation of a limb and are in such cases attributed to the disturbance in the nervous and vascular systems. The circulation on being confined to less extensive limits makes up in energy for that which it has lost in extent and evidently becomes more active in other parts of the body and especially in the internal organs. This will be seen to much the more in proportion as the patient operated upon was in good health or not. Some eminent surgeons maintain that operations performed merely for the purpose of removing a deformity do not
not as a rule succeed to well as most of these done through necessity.