

1860

"Ch Anapatalon"

Prof. J. M. D. W.
A. R. S. W.

At first sight the removal of a
limb might appear too desperate
a remedy for even the most unbeni-
gnant Surgeon to adopt; and yet,
there is scarcely any great operation
more familiar in all our Surgical
Hospitals than that of Amputation.
Were the limbs absolutely essential
to life, as the Heart & Lungs are,
it is scarcely wonderful to find
that we should have no oppor-
tunities of witnessing either their
removal by the Surgeon, or of
watching the recovery of those
from whom they had been
removed by accident or art.
The possibility of living without
a limb, hinges indeed upon the

circumstances that the organs of
 & respiration, whilst themselves preserv-
 ed of vitality & containing in
 their veins a large amount of
 the vital steam, are not absolutely
 exposed to the economy - and it is
 to their organs, that in numerous
 instances we must ascribe the
 comparative safety of the body,
 when exposed to shocks of a
 powerful character. which might
 diminish somewhat by the
 fracture of a limb must otherwise
 have proved fatal.

Accidents of a serious nature are
 not becoming more rare - on the
 contrary, they seem now more
 frequent than than was the case
 a few years ago; & when we consider
 of how much importance a
 right knowledge respecting ampu-
 tation is likely to be - especially to
 Surgeon & to those depending so
 much upon his skill & judgment,
 it may be questioned whether

The whole subject has hitherto received that attention which it deserves. In the following Essay I purpose considering first of all some facts in regard to the History of Amputation; Secondly the Mode of performing it & its Modifications as influenced by the part affected; Thirdly the Time for performing the operation & the question of Amputation & paraplegia; Fourthly the amount of hemorrhage primary & secondary; Fifthly the question of the employment of anaesthetics; and, lastly, the best mode of guiding the patient through the various stages which Nature has assigned his sometimes protracted recovery.

The History of Amputation is one of great interest as showing the slow, yet steady advance of Science in this direction. It appears that this operation was resorted to in a limited number of cases, so far

back as the time of Hippocrates, who
 appeared from the work, still at least
 to have been fully aware of the
 great advantage to be derived therefrom,
 tho' it would appear that amputation
 was then performed only as a means
 of getting rid of a part unwieldy
 & dangerous, & at the same time
 useless. The cause of failure; It
 appears that at this time & even in
 the time of Aesculapius & still earlier, this
 was the only occasion in which this
 operation was resorted to, and the
 surgeons then seem to have been
 impressed with the idea that its
 performance ought to have been confined
 simply to those cases requiring the
 removal of a dangerous part; this
 doubtless arose from the want of
 instruments; their method of
 performing it being very imperfect;
 this was the chief difficulty as must
 be evident from the fact of their
 leaving the actual matter, a red hot
 knife & other instruments equally

under -

Ambrose Pare' a French Surgeon who practised in the 16th Century, seems first to have had the courage to abolish Cauterising instruments & to have substituted the use of the ligature for the use of haemorrhage; Another important fact seems to have attracted the attention of this eminent Surgeon, namely, that in amputating below the knee, there can be no use in leaving too long a stump. He laid it down as a rule that a stump should not be over four fingers breadth in length - an opinion which is still held by the most eminent Surgeons of the present day - In operating on the upper extremity however he left as long a stump as possible, merely separating the diseased portion.

The true Pathology of haemorrhage seems to have been little known & so he appears to have passed

the needles through the flesh, so that a large portion was enclosed in the ligature, & the artery itself was further narrowed by a piece of "Linen rag" in order to prevent its being injured by the ligature; This was doubtless account for the alarming hemorrhage which so disastrously attended the practice of that period.

We would have supposed that the advantages to be derived from this method of operating hemorrhoids ought to have been so self evident that Surgeons would have at once adopted it; but so far was this from being the case, that even a hundred years afterwards, a button of Vitruil was used by the most celebrated Surgeon in Paris, & Paris, instead of forceps, received nothing but continually & ill treatment. - He appears to have operated by cutting down to the bone at once, & as the muscles

were cut shorter than the skin, they
 of course attracted, & left the hole
 without a sufficient covering, con-
 -sequently, the stumps were never well
 formed: & the projection of the end
 of the bone was a constant source
 of annoyance. - A deep dissection
 of the circulation of the bone, seems
 to have led the way to a most
 important addition to the list of
 Surgical operations. I allude to the
 Excision. - This was first used
 by a French Surgeon named, at the
 Siege of Besançon, in 1674. -
 William Whiston also seems
 to have seen the necessity for
 restoring the incision in the
 sound part, in Cases of pyæmia,
 on account of the inflammation
 spreading regulatorily; he also
 united the ends of the wound by
 means of Catena & Jellous Piles
 Method of preventing hæmorrhage,
 tho' the Wounds of that period
 present a curious example of the

fact in operations for...
 Amputation now seems to have been
 performed on sounder principles, tho'
 tho' the attachment of the muscles, &
 the joint & exhausting discharges
 from the large supporting surface
 had to be obviated; this was done
 by means of the flap operation which
 seems now to come into practice,
 the merit of this seems due to
 Mr. Gage, & after the adoption of it,
 union by the first intention has
 been generally obtained than had
 been the case with the circular
 operation.

The new mode of operating had a
 many & such manifest advantages
 that it has at once embraced by
 all surgeons; - Petri, & others in another
 way, in a more valuable suggestion
 as regards the method of amputating.
 He in the first place advocated
 the use of straight instruments used
 double, instead of the former
 curved one, & secondly he

adopted the plan of amputating by
 means of the double incision, that is
 to say he first made a circumferential
 through the skin & dissected it up, then
 he divided the muscles as high up as
 they were exposed; the lower he then
 saw through & thus he obtained
 a good covering for the end of the
 bone. The prejudice against
 ligatures still existed & he prevented
 haemorrhage by means of pressure
 applied to the surface of the stump
 after the manner recommended by
 Deauville. The only difference in their
 mode of operating being, that Deauville
 recommended the single flap, and
 Petit & others the double incision
 before mentioned. The flap operation
 was never before been pretty generally
 used; the chief reason of its failure
 in so many instances seems to have
 been the constant use of mechan-
 ical contrivances for making
 pressure on the surface, instead
 of using the ligature for this purpose

Indeed it appears from the statistics, that the great mortality arose from the hemorrhage.

Dr. Davis made another step in advance. Seeing the great difficulty then existed in obtaining a sufficient covering for the bone owing to the unequal retraction of the deep & superficial sets of muscles, he proposed, first making a circular incision through the deep & superficial muscles, then he divided the mass surrounding the femur, by means of a second incision made a high & they were exposed by the first, & by the use of atractor he was enabled to saw off the bone higher than the division of the soft parts.

The use of sutures to keep the edges of the wound in apposition seems not to have been recognized, or perhaps their application was prevented owing to the pain caused by their introduction, or from their being

supposed to prevent union. -

Dr. Alanson again reviewed the method of operating by first dividing the skin & dissecting it up, & then dividing the muscle obliquely, so as to form a conical shaped wound; & in the present day this, or modification of it, is the usual mode of performing the circular amputation. The method of operating is of course much influenced by the cause which makes it necessary, & on occasions even, the flap must be made from whichever we can obtain a sufficient covering of soft parts. -

The respective merits of the flap & circular amputation, have given rise to much dispute; however Wright Mason being brought forward on both sides, but it is especially with reference to amputations at the lower third of the thigh that Surgeons do not undecided. There seems to be no doubt as to the

propriety of invariably resorting to the flap operation at the Hip Joint or at the upper part of the thigh - the lower is the only disputed point; & after considering the various opinions on this subject, it seems to be the more general one, that, where the limb is muscular, the circular is the better method of the two; tho' in cases of Children, or persons weakened by long sickness, whose muscles are flabby, the flap operation is preferred equally well.

There are several modifications of the operation as influenced by the part affected - thus the author & Shoulder Joint &c. The results of amputation at the ankle joint have clearly demonstrated a most important fact - namely - that a covering of muscle is not necessary for a good stump; & this most of necessity greatly influences our future practice - One modification of the flap is made

by Mr. Seale requires special notice. His flap is very ingenious in theory, but at the same time tedious in practice, & its reported advantages appear to be equally well gained by the long anterior flap that have usually been in the habit of being performed at the Royal Infirmary of this City. In both cases the object aimed at seems to be, to get the end of the lower lip covered, & at the same time to raise the cicatrix far away from the end of the lower, so that it may not be subject to any irritation from that source, & as I stated before, I think those who as good results follow the adoption of the long anterior flap, would be expected to follow either Mr. Seale's method or any other.

His time for performing the operation, especially in cases

you shot wounds, we have a subject
 of great discussion. It is generally
 received now, that in case of
 you shot wounds, or those of a
 like nature, the proper time for
 operating is immediately after
 the shock of the injury has
 passed off, & the stage of reaction
 has set in; this in the ordinary
 practice, seems to have been
 chiefly brought about owing to
 the experience of Mr. Antchison, who
 found, that those cases, measured
 best in which amputation had
 been submitted to during the
 second stage; this has of course
 in a great measure owing to the
 getting & exposure which the
 wounded had to undergo in
 military practice; tho' Mr.
 Antchison states it as the
 experience of Naval Surgeons,
 that the sooner the operation
 is resorted to, the greater is the
 chance of recovery, & therefore

that those who on the most
 strongly presumed should be
 operated on first; in support of
 which opinion he has quoted many
 valuable facts, taken from the
 experience of distinguished Naval
 Surgeons during the late war;
 but I believe the more generally
 accepted opinion was, that
 as apt in its time, when
 delay would be injurious it is
 always better to wait till the
 stage of operation has set in.

In Civil practice, Compound,
 Communicated fractures, requiring
 Amputation, frequently present
 themselves to the Surgeon, &
 in deciding on the time for
 interfering he must be guided
 by the condition of the patient
 & the distance from which
 he has been brought to.

Secondary Amputation is
 frequently undertaken in account
 of the exhausting discharge.

caused by certain diseases, as also by the great constitutional irritation. In these cases, often, the febrile symptoms immediately abate after the operation; the pulse gets slower & fuller, the skin cooler, the patients express more brightness & the appearance taken is detached from the besyrias of death.

Amputation in Europe also has given rise to much discussion as to its propriety & their still seem to be considerable differences of opinion in regard to this. In case of traumatic injuries, there seems to be no doubt as to the propriety of immediate amputation, as, by cutting in the sound tissues the disease is at once got rid of & has no tendency to spread; but the surgeon should always satisfy himself that the local disturbance

is referable to the injury received
and not to some constitutional
defect.

In cases of mortification arising
from an injury, such as gun shot
wounds or fracture, it is usual
to wait to see if the line of
demarcation is set up, and
then to assist with the knife,
as far as may be required, and
then in those cases in which nature
shows no tendency to set up
the line of demarcation, it
may be proper to amputate,
as affording the patient the
only chance of life; tho' the
prognosis in these cases is very
unfavorable.

In some cases after rupture
of a large artery, gangrene
sets in, owing to the mass of
massing blood not being
adequate for the nourishment
of the limb; in these cases,
the indication is clearly to

amputation above the level of the
ligature.

Gangrene itself does not seem
amenable to treatment by
amputation, for it should evidently
be regarded as a disease to be cured
by any more local measures,
to cure a disease depending
on some constitutional defect.
In fact, attacking a symptom
& not the disease itself.

In some cases, such as those
which arise from the rupture
to vitiate cold, the gangrene
stops of itself; in these cases
it is always better to wait &
adopt a middle course, that
is to say, merely assist
Nature in her efforts to get
rid of the dead portion by
a judicious & sparing use of
the knife.

The question that must arise
to any one reading the
history of cases in which

compound inflammation & all
 the surgical results, have followed
 some compound fractures &
 you shot wounds - &c. Would it
 not be proper in the great
 majority of these cases to ampu-
 -tate primarily? I believe that
 in certain cases this question
 must be answered in the affir-
 -mative; that is in those cases,
 when from the severity of the
 soft parts, or the injury
 inflicted on the nerves, vessels
 or bone, there can be no
 reason able hope of an ultimate
 recovery without assuming an
 unaccountable risk to expose
 the patient's safety. -

From what little experience I have
 had I am inclined to think that
 many cases of some compound,
 comminuted fractures would
 be in a far better condition
 for recovery by submitting to
 operative interference, if an

earlier, better than a late period.

The treatment of haemorrhage
 has always been a futile subject
 of ^{an antiquary} literature of surgery, and
 as in the case of an aneurysm
 its improvement has been
 gradual and steady.

Aneurysms have always been
 the great dread, and undoubt-
 -edly, many valuable lives have
 been sacrificed, owing to the
 rudeness of the methods employed
 to arrest it. As I have
 already mentioned, the
 true value of the ligature
 was long in being recognised,
 surgeons being too fondly
 addicted to the customs of their
 forefathers, and too blindly
 followed in their footsteps;
 trusting to pressure made on
 the stump, both, actual
 cutting, local styptics & the
 like.

Aorta's disease undoubtedly
 diminished greatly the risk of
 immediate death from the
 effects of haemorrhage, but
 still the danger of subsequent
 haemorrhage remained & no
 attempt was to have been
 made to meet it, till at length,
 a century after its original
 discovery, the ligature again
 came into use, and the
 mortality immediately diminished
 the size, owing to their imperfect
 knowledge as to its mode of
 acting, and the circumstances
 of the soft tissues being
 enclosed along with the
 artery, alarming secondary
 haemorrhage was by no means
 uncommon.

Whenever a sounder Pathology
 made its advance upon
 the field of Surgery, the
 artery itself was alone enclosed
 in the ligature, and the wound

with result of this practice
 was, that secondary hemorrhage
 instead of being the objection
 & cause of surprise, became
 a thing of comparative rarity.
 Since these days great improvement
 - what has been made in
 the surgical appliances for
 the treatment of hemorrhage
 & it may now be said to be
 completely under the control
 of the operator. -

Now the remains our point
 undecided. - Some taking one
 view of the case, & some the other.
 Namely as to the propriety of
 using the tourniquet in all
 cases; its operation obstructing
 that by manual pressure
 the arterial tide can be
 completely controlled, & also
 that by this means the vein
 is not compressed, & so the
 venous hemorrhage is checked;
 and this undoubtedly is a

matter of some moment, in
 respect to be assisted by much
 previous sickness; this to ensure
 the success, the kinds of a subject
 Assistant will be required.

The advantages seem to consist of

- I. The ease of application
- II. The complete & perfect control
 of the circulation
- III. The unobscuring the operator
 completely regardless of
 resistance.

Believe that in ordinary
 practice, by apt to three
 instances, before alluded to.
 The Sovereign is found to answer
 every purpose.

Spontaneous amputations of limbs
 from injuries, without the loss
 of a single drop of blood, were
 the attention of some thinking
 men to the subject & led them
 to enquire why it was that there
 should be no hemorrhage in
 these cases; This led them to

The important pathological fact that obtains when there is eczema, or wet skin, the application of this to practice as it was used, and led to the arrestment of a skin eruption from some extent by means of twisting another than the ligature, than imitating nature, & this mode of procedure is found to answer admirably in certain cases; it has been successful even with ulcers of considerable size.

As a styptic application in cases in which haemorrhage takes place from vessels too minute to be laid hold of by artery forceps, perhaps another substance is superior to a strong solution of the perchloride of iron. This agent has been found of so much value in so many cases, that it seems doubtful, if any other application is really superior. It may be used however to

Mention Ruspini's Myopia, Section
of Nerves & c.

His operations may now be said
to have arrived at a high state
of perfection; still it has succeeded
by many hours, & numerous
patients appear to have been
freed from the shock alone.

It had long been the aim of
Surgeons, to alleviate the pain
during an operation & this they
partially accomplished by means
of Opium & other agents; but it was
not till the discovery of Chloroform,
that a patient could be assured,
before submitting to an operation,
that there would be no pain;
this alone seems to be of a
beneficial influence on the
future progress of the patient -
with the exception of certain
instances to be presently noticed.

Another most important advan-
tage is, that now, the Surgeon
can operate early and

delicately, anxious rather for
 the safety of his patient, than
 the quickness of the operation.
 The entire absence of pain
 rendering this latter circumst-
 -ance of minor importance.
 I should have to say
 in optional cases where the
 use of chloroform seems
 to be contra indicated - the
 has reference to operations on
 the Genito Urinary organs,
 for experience seems to be
 pointing out the fact, that
 for some reason yet unascertained
 these cases do not go on so
 well after the administration
 of chloroform - that on the
 contrary, the pulse invariably rises
 & febrile symptoms supervene,
 and since experience has proved
 it, it behooves us to be on our
 guard as to the use of chloroform
 in these cases.
 Local anaesthetics, such as cold

galvanism to have been employed, but with many questionable advantages.

The last point to be considered is the mode of guiding the patient through the various stages which Nature has assigned for sometimes protracted recovery. In the first place it is essential to the success of the treatment that the apartment in which he is confined should be well ventilated & kept sufficiently cool; and the patient should be guarded against the use of spirits.

Secondly, light sleepings are essential, & on the appearance of any symptoms of inflammation warm water fomentations must be assiduously employed.

Thirdly, any constitutional disturbance must be treated on general principles.

Fourthly, the facilitation of the end of the loan is one of the most common sources of delay to borrowers, & the most patiently wait till the liquidation is separated & then pursue it; opening any receipts that may from time to time.

By attending to the above indications, & trusting my unforeseen complications by acting on general principles, we may with reason hope to conduct our case to a successful termination.

In the above essay I tried to do originally; I have surely; as far as was in my power endeavored to give a short outline of a most important subject & I should state

Most of these have chiefly circulated
to the works of Hughes, Cooper, Alanson,
Scamper &c. In addition to these
were numerous writers on Geography.

Geo. P. Mason
M. D. C. C. Aug.