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A Sensible Essay

Very Good

Theory of Ulceration.

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Ulceration.

Static for the subject of this paper the Theory of ulceration; a knowledge of which I conceive is of great importance, both in a practical and scientific point of view. I would remark in the first place, that the phenomena of it, have been very differently interpreted by different authors. Some look upon it as a process of absorption, and hence we meet so frequently in surgical works, with the expression "ulcerative absorption". Some again, on the other hand, look upon it as a process of ejection; whilst a third party look upon it as a process of absorption, and ejection combined. In other words to render ourselves more intelligible about these views. When Nature (by which I mean the forces of the Economy.) doomes a part to the destructive process of ulceration; does she effect this by a process, wherely the spoiled tissue is carried into the system, by absorption; or does she effect it by a process in which the spoiled tissue is not

absorbed, but at once thrown off from the body in the shape of discharge; or does she combine these removing processes?

It may be said that the essence of ulceration does not lie in the removal of an ulcerating part, but that this removal is only one of the phenomena, of a complex process: the essence lying in the conditions vital and physical which render tissue subject to these removing processes. This condition of tissue in ulceration seems to have suggested itself to John Hunter for he says "When it becomes necessary that some whole living part should be removed, it is evident that nature, in order to effect this, must not only confer a new activity on the absorbents; but must throw the part to be absorbed into such a state as to yield to this operation".

In a paper on this subject by Mr. Alfred Key, he insists "that it is a process of degeneration or softening of tissue. And again "It is a degeneration or of tissue a change in the affinities, existing between

the component parts, by which it becomes changed from a solid texture, to a fluid inorganic mass."

Now I conceive it is of great moment, to a right understanding of ulceration, to keep in view; first the process whereby tissue is so altered as to be capable of removal; and secondly the process whereby the altered tissue is removed. When we speak of a part as ulcerating, we are apt to combine in our mind, these two processes into one process, whether we lay hold of the doctrine of absorption or non-absorption, and consider as one what is essentially two unconnected operations; the one being an operation of death and destruction of tissue the other of removal of this. Hence I think we can usefully divide our subject into two heads and consider first ulcerative destruction of texture; secondly ulcerative removal of texture. It may be said that these expressions, ulcerative destruction, and ulcerative re-

moval are quite synonymous with ulceration, and that a synonyme cannot be made a subdivision. I would limit however as before indicated the meanings of these words as serving our purpose in the mean time.

First, that the texture must be altered before removal, is manifest; both vitally and physically. Let us now enquire into the nature and process by which is effected this alteration. I will quote from Dr. Williams' Principles of Medicine at paragraph 463. "The obstruction to the passage of blood through the capillary vessels of an inflamed part, and the increase of this obstruction, by the pressure of material by those vessels, which are the seat of determination reduce the vitality of the tissues to so low a degree that they are unable to withstand the Chemical power of the effused fluids acting as solvents and heated as it is by high temperature. The textures are therefore, gradually disintegrated, and dissolved

away &c." In a note at the bottom of the page, he gives his reasons for ascribing a Chemical solvent power to the effused fluids. Now this is what I conceive takes place in ulcerative destruction of tissue. Dr. Williams describes it under the head of process of suppuration. That the process of suppuration and ulceration have a good deal in Common, we may learn from the fact that John Hunter Considered ulceration as suppuration attended with absorption. It may be asked why do I substitute the expression ulcerative destruction for, and appropriate the account given of ~~suppuration~~ the process of suppuration. My answer is suppuration involves the idea of formation of pus and overlooks the more important feature of destruction of tissue and is therefore too partial an expression to be synonymous with ulcerative destruction which has the tissue as the primary object of consideration, so that suppuration is as it were but one step of the process

and how far an essential one remains afterwards to be seen. Will now let us ask ourselves what is the essential character of this process; I think the answer to this is contained in Dr Williams expression that the textures are disintegrated and dissolved, or in other words brought into the state of a fluid holding more or less of solid material in a disintegrated form. Now what I conceive takes place, and the foregoing bears me out; is, that a tissue undergoing this ulcerative destruction, or now that we have learned something about it, we may call ulcerative softening is altered both vitally and physically and as the result of these alterations, it is brought more or less completely into the state of fluidity, mainly through the action of effused fluids, acting chemically, assisted as we may suppose by lowered vitality of the tissue itself; by which I mean a lowering of those forces which tend to keep living matter in a state of perfection.

Let us now say a word about Gangrene or Mortification. Said how does it differ from ulceration for they are both processes of destruction? I will quote from John Hunter. He says. "It (meaning Ulceration) becomes a substitute in many cases for mortification, which is another mode of the loss of substance; and in such cases it seems to owe its taking place of mortification to a degree of strength or vigour superior to that where mortification takes place; for although it often arises from weakness yet it is an action, while mortification is the loss of all action". Dr. Williams says in his Principles of Medicine. "In suppuration, the dying textures are softened and displaced by pus as fast as they die; in gangrene the textures die more extensively than pus is formed and they run into decomposition without being removed. I think it may be concluded that these two processes differ not in ~~Kind~~ Kind, but only in degree, in ulceration the textures

during their death are brought more or
less perfectly into the state of a fluid, whilst
in gangrene they die whole as it were.
In ulceration we might suppose the vi-
tality inherent in the tissue and the
difficulty of solution causes it to run a
protracted struggle for life whilst in
gangrene we might suppose owing to
the great diminution of vitality the
tissue gives way at once and en masse.
In a word death in the shape of a
more or less perfect fluid is the char-
acter of the one whilst death in the
shape of a more or less perfect solid
is the character of the other. In the last according as
the solids prevail over the fluids we
have moist ~~and~~ or dry gangrene.
It must be evident that there two;
ulceration and gangrene must insen-
sibly glide into each other, and there
are cases in which it might be dif-
ficult to say, whether they are extend-
ing themselves by a process of gangrene,
or ulceration or by which they were originally formed.

Though we have said and believe that ulceration and gangrene are so far analogous operations, yet the details of the two are different and as a point of difference in this respect we would mention the disposal made of the dead tissue by nature, so far as freeing herself of it. Now if we admit and see no reason to the contrary, that prior to the disappearance of a part by ulceration it must be altered, and that this alteration consists in reduction to a state more or less perfectly fluid and as proof of this fluidity I will mention first, granting the correctness in the meantime of the absorption theory of ulceration it is manifest that tissue must be rendered fluid in order that it may be absorbed, at least I cannot conceive with our present knowledge ~~with our present~~ of absorption and the absorbents how solid texture could pass through their unbroken walls. If on the other hand we admit of the theory of non-absorption

in ulceration, the proof of the tissue being more or less perfectly reduced to the fluid condition lies in the nature of the discharge. Well now having established as I think I have done the fluidity of tissue as one step in ulceration, the next question which presents itself is; how is this fluid removed? Is it absorbed into the system? Or is it at once thrown out of the system without absorption? Or are these process combined? First for the consideration of absorption. This was the agent in John Hunter's opinion and it was the prevalent doctrine for a long time. Aston Key was amongst the first I believe in this Country to challenge the correctness of this doctrine. It does not appear that John Hunter recognised a fluid condition as necessary for absorption though his expression that "nature must throw the part to be absorbed into such a state as to yield to this operation" seems to show his idea of the necessity of some previous

digestion. If his data be granted his idea of absorption being the great agent of ulceration is perfectly consistent and to a great extent independent of what I have considered as an essential step of ulceration namely softening and solution. He says "And the whole operation of absorption is performed by the open mouths of the absorbents. Resting upon the supposition of these open mouths, he goes on to say "They are capable of absorbing substances in two different states that of solidity and fluidity. But mouths have never been shown to exist in absorbents, and the supposition of them is opposed to what is best known concerning them and without such mouths, I do not see how solid matter is to be absorbed as such. Hence if we admit this theory of absorption in ulceration, fluidity is the essential condition of matter undergoing this so called ulcerative absorption, an expression which when all we know is opposed to the mouths of absorbents must

assume a different meaning to that Hunter applied to it. Now as we cannot admit that absorption occurs after the manner described by Hunter, the next question is have we any reason to suppose, or proof to show, that there takes place any absorption whatever during ulceration? Dr. Williams says, in speaking of suppuration and softening of tissue or what we would feel inclined to call ulcerative destruction of tissue, "This assumes that absorption is still active in an inflamed part and the supposition is warranted by the fact that the absorbent vessels veins and lacteals remain perfectly free. Now if this be true it is only fair to conclude with Dr. Williams that absorption is going on and so far theory is in support that dissolved tissue may be absorbed. And now let us see if this view derives any confirmation from observation. I will quote from Mr. Paget. He observes, "In certain cases of sloughing of subcutaneous

tissue, in Carbuncles not yet open or in Phlegmonous Erysipelas, or in the cases of internal necrosis, in which without any external discharge, pieces of dead tissue are completely detached from the living tissue around them. I cannot see how such separation could occur unless we admit the views of ulcerative destruction and absorption, of the surrounding tissue. Now when theory and observation are alike in support that it may and does take place it is evidence too strong to be resisted and I think the supposition that no absorption take place in ulceration is not in harmony with all that is known regarding this process. Now I believe that we are liable to fall into the error, of supposing that absorption does not take place, because we have purulent discharges, from ulcers and that abscesses are so unfrequently absorbed. But I conceive this is no proof. It may it is true find its way into the

circulation through the bone vessels but this is not absorption. We have no proof that pus as pus can be absorbed. I will quote from Dr. Williams. He says "That pus globules should remain unabsorbed will not appear extraordinary, when their size is taken into account and also the fact that their cysts are not absorbed by their proper fluid, having acquired a remarkable degree of toughness". Now I think this fully accounts for the difficulty in causing and comparative infrequency of absorption of pus; but that pus is sometimes absorbed not it is true as pus with its well formed cells but pus broken down and dissolved, cannot admit of doubt, and indeed may be seen in disappearance of what is called Hypopion or collection of pus in the aqueous chamber of the eye and also in the removal of certain lumbar and psoas abscesses without any external opening.

Some urge against this doctrine of absorption the statement, that absorption is at a standstill in inflammation and that ulceration is attended with inflammation and consequently that there is no absorption; but this is disproved not only by the observations of Dr. Williams' but also by the direct observation of Waltenbrunner who watched the gradual disappearance during inflammation of the pigment spots in a frog's foot which proves that instead of its being diminished it is increased at all events in some cases. It does not appear to me satisfactory the evidence and reasoning adduced by some and thought sufficient to overturn the doctrine of absorption. Aston Key says "That nature carries into the system noxious material and poisoned tissues, which can be more safely and effectually got rid of by other means is carrying analogy beyond the bounds of probability." The facility which nature

gives to the entrance into the system of matter, often the most noxious and deadly is a sufficient answer I think to this kind of argument. Nature so to speak has great dependence in her connections, and the variety and increase of materials which have made their escape through the various wickets of the system during many morbid processes might be adduced in support of increased absorption. Another argument and a more plausible one is that in certain cases of animal inoculations if the resulting sore be destroyed in the ulcerating stage the system is free and hence is established the system of destroying venereal sores if met with at certain stages. The explanation given of the matter is this; the animal virus applied to a part causes inflammation and ulceration of that part during which there is no absorption, and hence so far the system is free, but ulceration over the portion gets into the system, and

contaminates it. Such an explanation however involves its difficulties for if the poison is capable of exciting these morbid phenomena and that during these there is no absorption how does the poison ever get into the system and why is it not carried away in the external discharge? Besides how does it come that its presence at one time shall determine such actions that there shall be no absorption whilst some time after its presence is not opposed to absorption. Moreover if the poison of a rattle snake be applied to a wound it is at once carried into the system whilst the poison of syphilis is supposed not to be now, it cannot be said I think, that on the score of local irritation and consequent interruption to its onward march by absorption into the system the poison of syphilis is superior, to that of the rattle snake. At all events the subject of animal poisons has so many difficulties connected with it, that we must

not draw hasty conclusions, from them and more especially if there be opposed to observations, on which more reliance is to be put, and of a different kind. The fact however remains explain it as we may that syphilitic sores destroyed at certain stages save the system from contamination, but that this depends on this that an absorption of syphilitic virus into the system as yet I am not prepared to accept — as proven. It may be said the glands in the groin prove it. But a great many difficulties again present themselves. Pubes may be inoculated in any kind of one of the penis specific and non-specific, and wherein lies the proof that the one is in possession of something essentially different from the other? If the gland really contains syphilitic poison which is causing the mischief how comes it that it is usually only one & which often suffers since all the absorbent vessels, and ganglia so freely communicate with each other

Whatever explanations we may give of this matter I do not think that one is correct, that supposes there is no absorption during ulceration. It is opposed by too strong evidence on the other side evidence which we are compelled to admit and indeed absorption seems the only agent in some cases as those instances by Mr. Paget & John Hunter relates the case of the separation of a tumour from the dura mater in a Highland Soldier in which he says. "No matter was ~~to~~ to be observed here either from the dura mater the unconnected edges of the bones of the skull, nor from that part of the scalp, which had given way, and perhaps the reason was the tumour being a living part and not an extraneous one. The general effect was, however similar to the Images of an abscess inasmuch that it was on that side nearest to the external surface of the body that the irritation for absorption took place." Now I think this case not only shows that absorption can and does take place at all events in some

cases, but it is suggestive of the manner in which material lying over an abscess is removed and so far it would tend to show that breaking down of the superjacent tissue & falling into the cavity of the abscess is not the means which nature resorts to. To say the least it shows that in certain cases absorption appears to be the agent in removing the debris which arises from the separation of extraneous matter from the system; and the only agent. From this and many other observations and reasoning, it seems but fair to conclude that it is consistent with many things well ascertained, and observed, that absorption can and does take place in ulceration; but what is the exact share it does take place in it is an inquiry full of difficulty and one which is not satisfactorily determined. It does appear to me however that it is reasonable to suppose, that which is more perfectly fluid is absorbed during ulceration,

which that which is not to undergo flux is not, and cannot be absorbed, but is thrown off in the shape of discharge.

This brings us to the second theory or non-absorption theory in which during ulceration everything is supposed to be thrown off as discharge. If what we have stated in the foregoing be correct we cannot accept this as true and the refutation lies we contend in the foregoing. It is too exclusive and does not serve the purpose of a theory which should be in accordance with all that is known concerning ulceration and I apprehend it is like the opposite exclusive doctrine of all absorption in this respect; both conceive are incorrect though perhaps not equally so.

Well but what establishes that there is ejection; and that the whole affair is not one of absorption, in every instance as it appears to be in some? I think the answer is both reason and observation.

Reasoning about the matter it is difficult to conceive how those particles of

tissue, which are not completely dissolved could get absorbed and as before remarked this difficulty of solution explains the reason why pus is so little amenable to absorption. What does direct observation say in this matter? Mr. Paget says "The materials of the ulcerating tissue may be sometimes found in the discharge from an ulcer." Mr. Bransby Cooper has observed that while pus from soft parts only contains a trace of phosphate of lime, pus from diseased bone contained 2½ per cent of that substance. Minute portions of bone have been found in the discharge from ulcerating bone. In the so called ulceration of cartilage, the process of ejection of disintegrated tissue is clearly traced according to Mr. Paget. This latter I do not however attach much weight to as an argument; for that it is a process analogous to ulceration of other textures may be fairly denied. But even in that case absorption can

and does occassionally take place and it is not always a process of ejection in which the disintegrated tissue is never carried into the system. We will quote from Sir B. Brodie's work on Diseases of joints. It is the case of David Martin page 174. Having detailed the case and after description of the right leg he goes on to say of the left knee. "On dissection, the ligaments and synovial membrane were found to be in a perfectly healthy state; but about one third of the Cartilaginous surface of the tibia and femur had been destroyed by ulceration — the ulceration having taken place principally, but not entirely near the circumference. The Cartilage of the patella and the semilunar Cartilages were entire; but the latter in some parts were softer than natural. The bones were free from disease. There was no purulent or other fluid in the joint. This shows that ulceration is not always

a process of disintegration, and ejection. It would be an interesting question, how this absorption occurred, for we have no right to attribute absorbents to Cartilage. and as regards blood vessels Cartilage is quoted as an example of a non vascular texture. Every thing seems to show that this absorption was performed by the neighbouring tissues. But it may be asked why is this not more frequent & how comes it that we have so frequently collections of fluids in the joints in ulceration of cartilage if the absorbents can do so much. I think the explanation lies in this. It is with great difficulty that such fluids are induced to perfectly liquid as to be capable of absorption and may not that a large portion of what we do meet consists of pus, the cause of the non-absorption we before hinted on of this fluid. At all events when Paget's view goes to the contrary so far as he traces molecular disintegration and ejection,

It may still be a question how far the collections of fluids in joints consist of broken down disintegrated cartilage unabsorbed or whether they are not mainly the synovial fluid which is so often formed during the breaking down of the cartilage. At all events the absorption of the ulcerated cartilage when no pus was formed would suggest some idea like this, and tend to show that the difficulty lies not in the removal of the cartilage but of the pus. But to return. I think we have abundant proof to show in the nature of the discharge of certain ulcers that ejection takes place, of certain materials of the ulcerating tissue and that the Hunterian theory of it being a process in all cases of absorption is inconsistent with what we know just as the Apostolic doctrine in which ulceration is trace

altogether a process of erosion is at variance with other things we know.

We lastly come to the theory which combines these removing processes to which we beg to subscribe ourselves, and of the proof of this theory being true we must refer to what has been said of the others. It alone embraces all that is known regarding ulceration, and I think we are bound to accept it in the meantime until some of the difficulties which at present surround the others be cleared away.

Considering this as the correct theory it becomes an interesting question to enquire to which of the foregoing removing processes should we refer the larger share of the production of ulcerative removal. I think this will depend upon the nature of the texture undergoing ulceration, and the rapidity with

which it is performed, and that the
tissues die more rapidly than they can
be dissolved by the effused fluids in
some cases whilst in others their dis-
solution is more complete. In the former
I would suppose absorption to be lar-
gely concerned in their removal whilst
in the latter ejection. These however
are mere suppositions. I can conceive
a limb however with enough vitality
to resist its death except in the mini-
mutest proportion, whilst in another
case it yields more readily and dies
in some what larger proportions whilst
in a third it yields still more readily
and dies at once. In the first I
can suppose absorption in the second
ejection and in the last gangrene
Fancy however is fertile and were
we to trust to it we may be led
into the gravest errors, it is only use-
ful when supported by observed facts.

We would now say a word about the term Ulceration. We cannot help thinking that it is a word used loosely and vaguely and made to include things which have no essential connection. We speak of ulceration of the Skin and ulceration of Cartilage. Yet these two words must mean very different things. Dr. Redfern says in reference to ulceration of Cartilage "That these changes are referable only to an abnormal nutrition as their immediate cause, and in no case to mechanical or chemical actions, such as attrition or digestion in a diseased secretion." Surely this account would not hold good of ulceration of Skin! Yet Mr. Paget reasons from the one concerning the other. He says "In the ulceration of Cartilage, however, in which inflammatory exudation has no share, the

process of ejection of the disintegrated tissue is clearly traced; and we might deem this almost a proof of the same process being observed in other tissues, if it were not that in the cartilage a necessary condition of absorption, the presence of a circulation, is wanting." Well I think that these two processes are so different that nothing derived from the one can be held as proof that the same takes place in the other, or even anything inferred from the one concerning the other they differ so essentially. Mr. Redfern shows that this so called ulceration of cartilage consists in the splitting up of the hyaline substance into fibres with increased endogenous cell-formation—a thing totally distinct from ulceration of skin. We might cite other instances but the foregoing shows how vaguely the expression has

been employed. Mr. Paget remarks "That ever since the time of Hunter confusion has existed in the use of the terms employed for various kinds or methods of absorption and ulceration. Of all that Hunter wrote nothing I think is so intricate so difficult to understand as his Chapter on ulcerative inflammation; and much of the obscurity in which he left the subject remains." Mr. Paget proposes to limit the use of the word to the removal of the superficial or exposed particles of inflamed part. This supposes that the part is removed in the shape of particles and not in the state of solution a theory which all might not agree to; especially as in most cases he says, in another part, it is impossible to find the ulcerating tissue in the discharge from the ulcer. If we take up the absorption theory,

it may be termed "Alternate Absorption" if the ejection theory then it may be called "Alteration", but if we hold the two as I think we have reason to do then we are left in the dark by Mr. Paget.

Iwanls suggest that we might use the word alteration to signify minute death, dividing it into vascular and non-vascular, the former the result of altered nutrition with deranged vascularity the latter of altered nutrition alone. Of course many objections might any fatal ones could be raised against this but such as it is I give it. At all events as Mr. Paget remarks the terms that have been employed are confusing. It is needless to say that the word ulcer like alteration is very vague, and has been applied to conditions and things the very opposite to healing and

and repair to death and loss of substance. I think however the general substitution of sore for ulcer which is being gradually adopted, and the division of this into healing and ulcerating is a great improvement for anything forbade such an expression as an ulcerating ulcer: and prevented such a suggestive division.

In conclusion what I have attempted to show in the foregoing ~~in the fore-going~~ pages is that ulceration as it usually occurs in a vascular part is a process whereby tissue is disintegrated and dissolved and that it is reasonable to conclude that part of this may find its way into the system by the absorbents whilst another portion may be thrown off the shape of discharge that the liquid is that which is absorbed whether both liquid and solid may be yielded and that in the mean time observation compells us to accept them both.

I have made an attempt to show that both absorption and ejection may be the means of clearing off ulcerated tissue and that neither held exclusively is consistent with all that is known. I have tried to show that the expression "ulcerative absorption" with the Hunterian meaning is incorrect namely the absorption of tissue by the open mouths of the absorbents. Indeed we have no proof of any morbid increase or excitement of the absorbents during the process of ulceration, they simply carry away what is presented to them in a fluid form and when this does not occur, matter is not absorbed as pus. It must first undergo a species of liquefaction prior to removal by absorption, but Williams' observations would go to show that it has little tendency to do and hence the rarity comparatively speaking of absorption of this fluid. The inspissated form which sometimes presents after remaining

a long time without getting what supports ~~to~~ this view as we may suppose that the toughness of the cell wall prevents solution whilst the liquor puris gets absorbed and that such things as pus globules should get through the unbroken walls of absorbents (by which I mean veins lacteals and absorbents) is not conceivable.

There are many interesting questions which more or less relate to our subject but we find we cannot enter into these. The general doctrines of absorption in the animal body is a subject which relates to ulceration. It might be a question how far the process which we call increased absorption is not a process of diminished growth the absorbents being concerned in removing effete material & whilst its place is not taken by new material so far simulating a process of increased absorption whilst in fact it is only normal absorption

We have to acknowledge many imperfections in the foregoing and may-be in some cases we have got into error which has completely misled. It is however very difficult to keep on the right track in the dark obscurity of a difficult subject

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