The treatment of ulcers with special reference to ulcers of the leg.

Ulceration is tersely described by Prof. Chichie as "a process of molecular death on a free surface." But I am including granulating surfaces left after injury with loss of substance, which are practically healing ulcers with the skin & tissue around in a healthy state. Of course if neglected a process of true ulceration will take place in these.

I will confine myself to nonspecific ulcers except in so far as I refer to some syphilitic ulcers of the leg.

When visiting surgical at the Stockport Infirmary, during 14 months, I attended 49 cases of ulcer of the leg at their homes & to those I shall refer first. Six of the 49, 10 only were males showing a large proportion of females affected 4 to 1, but probably the proportion is not really so high as this, many men not being able to receive home treatment on account of their employment. I should think one reason why they are more common in females is that varicose veins occur in them more frequently as a result of pregnancy.
Poor living seems to be an important factor in their production, lowering the vitality of the tissues. Most of the cases occur in hospital or union practice.

During 12 months practice in a large manufacturing town where the wages were good I don't remember attending a single case I have seen very few since leaving the infirmary.

Age. Except in 3014 syphilitic cases the patients were over 50, many over 60 years of age. The general vitality of the tissues is lowered & arteries thickened.

Position. 35 occurred on the lower third of the leg, 2 on the calf, one on the dorsum of foot as well as the ankle & one on the upper part of the thigh. The 4 latter were undoubtedly syphilitic. Why so frequent on inner lower third of leg?

The dependent position & distance from the heart has no doubt a good deal to do with it, but as Hillen says (Izct Rest & Pain p 217) if this were the only cause the foot would be more frequently affected. He explains it by the fact that the deep & superficial veins freely anastomose on the dorsum of the foot & about the ankle joint, but above this the anastomosis is not so free. (Gray's Anat p 618) & consequently
the veins in this part are subject to
a greater strain, I think, another reason
is because the shin is tightly bound down
here, & when any inflammatory or other
irritation is poured out the shin gets
very tense & so is liable to slough after
some slight injury; this part of the
leg gets more than its fair share of
knocks & bruises is chafed by the top
of the boot.
Thus again there are no muscles in this
situation whose contractions & relaxation
favour the circulation in other parts (Kirkus Phys. 229).
Variege veins. In 34 cases there were
variege veins, 4 of these were also syphilitic
& 23 had Eczema as well, & two
had miliary disease.
Gay does not regard varicosity alone as a
cause but a complication of ulcers (Jan 26 7 p 460 1495).
I think he meant where the small
veins radicles were not enlarged as well.
In half my cases variege veins appear to be the only cause apart from poor
living or old age.
Influence of syphilis. 14 of the cases I
put down as syphilitic. 10 of these
were undoubtedly so & the remaining
4 Iclassed as syphilitic because they
healed so rapidly under pilocarpin
Fodder. They may not have been so however, as I found that in all cases where polioioides was given there was marked improvement so that whenever healing was slow I gave polioioides in doses of 10s three times a day increasing if necessary. I always with benefit. Gay recommended it (Jan 1/68 1496) it probably acts through its power of removing inflammation.

Eyema alone accounted for one only but in 3 or 4 of the various ulcers eyema was present.

Injury with loss of substance followed by neglect accounted for 2.

I append a table giving the treatment I adopted & results.

11 healed, 4 were healing & in 2 there was no improvement from either neglect or the patient's part. One with sloughing ulcers, suffering from Bright's disease, was sent into the Union where he died. One about old man with glycosuria also died from gangrenous ulceration.

I usually saw the patient once a week. The district nurse called twice a week & cleaned the ulcer & leg thoroughly. The patient doing the dressing in the meantime.
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Treatment:

- All had elastic wooling bandage over the dressing.
- 26 Bureic fomentations only
- 9 Fomentations preceded by pure carbolic acid
- 1 Fomentation + Strapping
- 1 Fomentations + Pure Carbolic Acid + Strapping
- 1 Fomentation + Effused
- 4 Fomentations followed by Buree ointment
- 4 Fomentations + Strapping followed by Virgand Buree ointment
- 1 Fomentations + pure carbolic acid followed by 
  Bureet + Buree ointment
- 1 Fomentations followed by Virg. Hydrag. + Shrin
  graft (Reverb) + Buree ointment
- 3 Buree ointment only
- 1 Pure Carbolic acid + Fomentations  
  Footform + dry dressings

22 | 4 | 1 | 26 | 1 | 6 | 1 | 1 | 49
Treatment of Ulcers of the Leg.
The division of ulcers into simple, inflamed, irritable, varicose etc is merely for convenience as one merges into the other - a varicose or syphilitic ulcer may be simple, inflamed or callous.

Constitutional. Improvement in diet if it can be obtained is suitable. Tonic.

If anaemia present preparations of iron when the heart is at fault suitable tonics or cardiac tonics are indicated.
If ulcers are inflamed purgatives are useful to quieten to relieve pain if perhaps helps to subdue inflammation (Jan 1/68 p 245-249).

Local. Rest in bed with elevation of the leg is one of the oldest & best methods Chapman (Mid Jour Gaz 1/52 p 389). Fay (Jan 1/68 p 460) & Fynes (Jan 2/76 p 587) give as his trinity of healing - Rest, position & pressure. It was used long before this however (Bell - Heath's Ulcer p 210) written in 1787 recommended rest in horizontal position which he mentions as an old method. Spunder (Jan 1/73 p 623) does not consider rest necessary. I admit this but still it is preferable if it can be obtained & then also a splint for the leg with a footpiece should be used.

Local rest by means of a splint with or
without general rest is necessary when the ulcer is situated over a muscle & moveable with it. London Times ref. (May 26 1870 p.391) I have found this necessary in some injuries where granulating surface has been left over the gastronomus muscle.

In the majority of cases rest in bed cannot be obtained & we must do the best we can under the circumstances & a great deal can be done, but unremitting attention must be given to them & the patients get careless. In one of my 49 cases the patient stayed in bed until healed (2 months) & that was a case of 2 huge syphilitic ulcers on the leg which I finally closed with Reverdin grafts. In only one other case was there any rest in bed at all & that was only for a day or two now & again.

Much good can be done by directing the patient to sit down whenever the opportunity occurs to place the foot on another chair or to sleep with the foot of the bed elevated (Hilton Jan 2/61 p.224). All my patients did this & wore over their dressing a woven rubber bandage from toes to the knee or above it (Jan 2/82 p.473). Bell (Treaty of Ulcers 7177) in 1787 recommended
pressure by bandaging which he refers to as an old method neglected.

Spindler (Jan 1/73 p. 623) used their chalk ointment to form a scalp, to imitate nature & over all a form domel-bandage.

Scabbing is often taken advantage of now as a means of promoting rest but in ulcers of the leg treated at home I do not like it, as organisms are apt to accumulate under them.

Massage helps the circulation, especially in the lymphatics moving the effused products. Appunrodt (Brit med J 2/88 p. 187) & Hubert (B.M. J. 2/90 p. 1362).

Eider in this thesis recommend massage of the floor of the ulcer which he says is not painful. These methods are too laborious for general practice & patients cannot be intrusted to do it.

Any source of irritation must be removed. Mechanical friction of clothing & bandages badly applied - irritating dressings such as carbolic acid (Jan 1/79 p. 839).

Some cannot bear iodol and in a few boracic acid will set up eczema.

Micro organisms & their products are a fertile source of irritation & some antiseptic dressing is employed.
Solid silver nitrate rubbed over the surface was used by Higginsbottom (Med Times & Gaz 2/63 727) in a solution of same before this by Critchett (Leds Jan 2/48). These were not used as dressings but only as stimulating applications & are used in much the same way now.

Carbolic Acid. in 3% 4% Glycerine solution was used in sloughing ulcers. Knipe College 20s Jan 1/68 p 48. Spindler objecting to the smell of carbolic acid (then impure) used wool soaked in big soda & chloride of lime under his chalk ointment if ulcers were foul (Jan 1/73 p 623). I should think it was very effective. More recently chlorine gas in wool has been used by Rivers (B.M.J. 1/947 117) but is troublesome to prepare but might be used for preliminary disinfection as it is very penetrating.

It is not my intention to give all the old methods of treatment before the days of antiseptics are now extinct. Almost every antiseptic has been tried but I shall only pick out those which have been found to be of most service to cleanse the surface. The majority of ulcers when we get them are in a foul state & we want to clean them as soon as possible.
Lister's first method was, after thoroughly scrubbing the leg with soap and water to washing with 1 to 20 Carbolic acid, to apply a solution of chloride of zinc 40 to 31 repeating in a day or two if necessary (Jan 1757 604). The objection to it is that it is very painful. Watson Cuykne applies pure carbolic acid to the granulations & if sequestrum scabs them away first. I employed it in 10 cases, 2 simple & callous ulcers found it very efficient. It causes some smarting soon followed by anæsthesia. He first cleanses the skin as for a surgical operation, but I think this useless unless the patient is under supervision in bed.

Carbolic oil 1 in 5. Painted into the ulcer or hint for several days in succession is less painful but slower. The oil helps by keeping in the heat. (Hilton Jan 1667 479)

Iodoform. is preferred by some for disinfecting the surface (Mid Junes 1827 178 1270) but as it appears only to be active from iodine set free in presence of pus it cannot completely disinfect the surface but this can soon be completed by a few boracic fomentations. Its smell is objected to by some people.
For disinfecting large raw surfaces left after burns I found it very useful—either alone or mixed with boric acid. Amongst some of the latest dusting powders are Aristol which is a good drying powder but not very effective (Mid Annal 1896 p. 22). Chinookol I have tried acts very well but does not come up to iodoform—though it is free from smell.

Europium is rather irritating (Mid Annal 1894 p. 557).

Acetaminolol has a sedative effect & might be useful in inflamed ulcers—may cause poisoning.

Iodform used by Schmidt as dusting powder (Mid Annal 1895 p. 493).

Aristol used by Jansig (Mid Annal 1874 p. 11).

None of these I think are quite as good as iodoform but when its smell is objected to they may be used.

Formalin gas in 2% solution is a good germicide but is irritating.

After disinfecting the surface we want to employ some unirritating dressing. Lister used borax lint over protective

(Ibid 1875 p. 604). If ulcers were painful or sloughing he applied the lint wet & covered it with protective. This latter
method I used for all ulcers of the leg unless Eryema was present, but instead of lint I used absorbent wool wringing out of hot boile lotion. I found this absorb the discharge better than lint and except in a few cases there was no tendency to reddening of the edges. To prevent the wool from sticking a single film of gauge was placed over the ulcer first. This plan I found very satisfactory. In 26 cases it was the only treatment, except elastic bandaging I did not do in many cases. The patients found it easy to apply, but it is rather expensive.

The sore was dressed once a day - 2 four to begin with, every 4 hours for 24 hours either after or without the application of pure carbolic acid (see table). When patients cannot be trusted to do the dressing I can only be seen once or twice a week then Eychman's plan is a good one (Science Quart J Surg p 276).

Protective - Tadpole or other absorbent wool soaked firmly bandaged on 2 Rodr. a few days or a week (Cheap).

Ointments are preferred by some but I think they are very suitable for Eryematous cases in the late stage when
Ulcers are almost healed and continued afterwards for a while. I always used bore-ointment or bore-diluted with lanoline. "Unction for Ulcers" (c. 1727)

Toddyform, Eucalyptus ointment, are good but no special advantage.

Electricity: Spencer Wells (1832) used plates of pure silver connected by a wire and applied directly to ulcers or ulcers and skin. Probably the gases given off, of which oxygen would be one, had more effect than the current.

Brush discharge from positive pole has been advocated by Marquet and Archibald, (Archives d'Echeliere) Aug 2nd 1827 (Jan 1/57 p. 178). Yogurt in cow heated by means of spirit lamp - tenebrous evaporation. Probably the rest in bed elevation had most to do with the healing.

Radient Heat: tried with success by Edison (Jan 1/97 p. 1486).

Oxygen has been extensively tried by Stoker (Jan 1/95 p. 841 p. 2/95 p. 1436 et) Ulcers heal very rapidly in it. It is applied in a bag mixed with equal parts of air. It is very expensive and can only be applied successfully in hospital. He found that staphylococci flourished in it and when this died healing almost stopped but commenced again on their re-introduction by inoculation.
so it appears as though some organisms favour healing at any rate in the presence of free oxygen.

\[ \text{H}_2\text{O}_2 \text{ was used by Shelley (Pract 1/54 J 197) to act by giving off free oxygen.} \]

Hydrogen peroxide is a solution injected into the tissues around the ulcer has been used by Burylan (New York Med J. June 16/94) Pepsin as a powder by Summers (New York Med J. Feb 8/94).

All these latter methods are interesting but not of much practical use.

If ulcer is inflamed there is nothing better than the jontations I have mentioned. Some prefer cooling lotions lead or prium (Jan 1/68 J 48) but from what I have seen among outpatients I think hot applications are better. Free incisions into the surrounding inflamed tissue & division of small buds of 2 skin, if any, will relieve tension & may save further sloughing (Cheyne treat. Ulcers J 7138). This I have never found necessary. Weak granulations. General health must be attended to.

If due to too much poulticing these must be stopped. Redundant granulations are best reduced
By solid silver nitrate (and this is 3½, 2½, 2½)
or copper sulphate sulphate or if
overhanging may be scraped or clipped off.

Thin a stimulating dressing applied
such as 20 to 31 ferrie chloride
sulphate (Jan 1/68 p 48) or weak silver
nitrate or copper sulphate solutions.

20 to 31 ferrie chloride has also been
used (Jan 1/68 p 48).

When granulations were not too mature
but small & weak I found a piece of
sponge the size of the ulcer dipped in
red hotoin covered with a larger piece of
lint smeared with bone ointment very
useful. This prevents stitching back as
a mild poultice.

If weak granulations were due to
inability of the sore to contract Gay
(Jan 1/53 f 566) made incisions at the side.
In one case he excised the ulcer & freed
the edges, made incision at side & drew edges
of ulcer together with silver wire.

More recently Wallace (Jan 1/87 f 1226)
carried out same treatment but skin
grafted the raw surfaces left at sides.
This latter I should think a very good
method but of course requires rest in
bed & an anaesthetic.

Hardie (Jan 1/54 f 579) recommends crucifix
incision in adherent ulcers - deeply through the fibrous base & from shin edge to shin edge. Ulcers at first increases then rapidly heals.

Annandale (Jan 1/89 p 330) removed bone to help healing & he states that it had been previously by Syme.

I never found incisions necessary. No doubt healing would have quicker in some cases but patients object to the knife. Callous Ulcers, is the result of neglect & is difficult to treat as the patients are careless.

To soften the edges & increase the blood supply Syme applied a fly blister to the same ulcers (Jan 2/62/370 - The first reference I can find to it is in Butcher's Lecture Jan 2/48) but he must have used it some time before this. I never used it as a preliminary but in 2 cases that were going only slowly, I applied a blister to the edge only & there was some improvement.

In one case of deep syphilitic ulcers, where the patient could not stand antisyphilitic treatment for long, I was using boree formulations & these set up a very acute kind of eczema of the whole leg. The dressing was changed to zinc ointment...
and to my surprise the ulcers, which before were extending, healed rapidly to this I put down to the increased blood supply brought about by the eczema. Before applying a large blister the urine should be examined for albumen. Strapping, after Baylton’s plan (Mid Jun 3 15/2/389) is the method I prefer for reducing the hardened edges. The first reference I can find to strapping is in Butcher’s lectures (Jan 2/48) but probably it was used long before this. The leg or ulcer should be thoroughly cleansed before each application and some holes left for the discharge to escape. Into some antiseptic wool placed to receive it the whole covered with an elastic bandage. Besides reducing the edges it forms an admirable support to any varicose veins. Many cases can be healed by this method alone but it is better, when healing commences to use some simple antiseptic dressing. If skin is eczematous it is not suitable. Lanz (Jan 2/55 7/105) used it over a dressing but this is unnecessary if you have been rendered aseptic Cole (Mid Ann 97 7/1598) after cleansing, categories the surface to give edges before strapping. I don’t think this is necessary. It requires an anaesthetic.
The ulcer might as well be grafted as finished with after going so far. Martin invented a solid rubber bandage which he applied directly to the ulcer. Callender speaks well of it (Jan 2/78 p 503) but to me it appears a dirty method used in this way so many patients cannot wear it on account of the irritation it causes. When perforated it is better. Cheyne (Tr Ulcer No 7 145) uses it over an antiseptic darning but even then I found it irritating. I prefer the elastic webbing bandage worn over the darning. It does not last so long as the solid rubber but is not very expensive.

Vonng uses a paste of true gelatine applied warm with several layers of a gauze bandage. She is first cleansed & iodoform powdered on (B. M. J. 2/87 p 449). It is an excellent method for outpatient work - supports any varicose veins & is good for eugematous cases. German Hospital Dalston reports well of it in all cases. (B. M. J. 1/88 p 245)

Vonng's gelatine is sold locally, has been used by Frank (Jour of Amer Med Ass vol 22 p 6) Vonng's darning & tricot-allow (New York)

JMD JOUR May 20/97)
Irritable Ulcer, shown by Hilton (Tex. Med. J. 1148) to be due to exposure of nerve on surface.

He cured by proximal division with a lancet.

I should think this was the best method but in cases where the patient won't submit to be cut then the old method of solid silver nitrate well rubbed in, or silver nitrate solution, may be used.

Cocaine may be applied previously to diminish the pain (B. M. J. 1/59 p. 16).

Brettell (Jan 2/48) recommend strapping with the whole strength opiates to lead opium lotion were formerly used but only gave temporary relief (Jan 1/53 p. 117).

Barece Ulcers. Any of the previous methods may be used but those giving support to the veins are best such as Unna's zinc gelatine - Elastic bandaging, Gay (Jan 1787 - 1929) tied the vein. It is better to wait till the ulcer heals before operating for fear of septic phlebitis.

Eryematous Ulcers are best treated with bone or zinc ointment. Unna's dressing is very good. When washing the leg some non-irritating soap must be used.
Treatment of granulating wounds left after burns & other injuries with loss of skin.

These are best treated by skin grafting. Ulcers of the leg after being brought into a healthy state can be treated in the same way if the patient can stay in bed the requisite time.

By this method we get more rapid healing than by any other; a sound scar is left & there is less liability of deformity resulting from contraction of the scar.

If the sore is very small, grafting is not necessary. Tisserant's method of bronze lint over protective answers admirably. After burns I found bronze ointment suited well.

If sore covers more than — say 1½ sq. inches — but is not so large that much contraction will take place then I think Riverdin grafts are the best. It depends a good deal on the position. If on the face even in small sores Churich grafting would be better because we want to have no contraction at all if possible (Rivard, 1870, 1872). Riverdin (linum times 234 2/10 02 42 12 02) cut off shavings of epidermis therapeutically with a lancet. These shavings therapeutically be put on the granulations covered.
with diphyllostomatous or with keratosis, but they got rather foul under this.

So we got into a healing state first.

Pothole (Jan 2/70 7305) cut holes in the
granulations in which grafts were placed.

Sliam (Jan 1/73 7799 7/75 7604) cut off
small pieces with lancet from arm
previously cleansed with carbolic, cut
these into several minute pieces on the
thumb nail (in boric solution) to spread
them over the granulations. Some did not.

Take - the difficulty is to tell the upper
from the under surface.

Gripps (Jan 1/71 7475) invented scissors
for grafting. I found ordinary scissors
curved on the flat, if simply pressed
on the skin, the best - least painful
as I always took them from my own
forearm in the case of children - applied
directly. The thinner they were the better
& they invariably took. They were
covered with oiled silk in which were a
few holes & then strapped on (Blyth Jan 1/73 7360)
when applied.

Whole shin from prepared removed for
phymosis was employed by Lucas (Jan 2/84 p 856)
Skin of frog by Allen (Jan 2/84 7, 873).

Easy to obtain - can be kept some hours
in moist protective & one shin covers...
a large surface. It is repulsive to many people. I should think difficult of disinfection

Skin of rabbit by Mastman (BM J. 1887. 187).
Skin of fowl by Weisman (BM J. 1887. 367).
Skin from amputation (Illust. Medico. 2/89. 183).
Skin of puppy, including the cellular tissue
by Miles (Jan 1/90. 7 584).

The method of using the whole skin
I have not tried except in the case of
a girl who was completely scalped but
hair being caught in machinery. The
scalp was brought to me in an hour
afterwards in two pieces & under anaesthetic I carefully shaved & cleaned
the head & scalped & stitched it in place.
At first it showed signs of taking but
eventually sloughed off, although the
wound was quite clean. If it had been
put on directly after the accident the
warmth no doubt it would have taken.
I subsequently trimmed after the head
with a good result.

The whole skin does not take so
readily as Thurich grafts to large pieces
cannot be taken from the patient; so
one must wait for an amputation
or else some animal's skin must be used.

Practically the whole of the graft
disappears except the epidermis so that
the result is much the same as in
Church grafting, where only a portion
of the skin is taken. This is the
method I prefer for covering large
surfaces. They can be taken from the
patient & are more sure in taking than
the whole skin is.

I cannot find the original reference to
it but a good account of the process is
found in Chyune's book on Ulcers p 130.136.
The difficulties I found, were, to keep
the soral perfectly aseptic - the most-
rigid precautions must be taken; to
avoid breaking through into the
fat when scraping - for this reason
it is better to set a firm base by
repeated cauterying of the surface with
silver nitrate.

I left the grafts where cut until required —

Some prefer to put them in warm
antiseptic lotion. I uncurred by
wrapping round one thumb, upper
surface upwards. In ulcers of the
leg Chyune lays stress on the
removal of the growing edge before
operating on account of its liability
to break down afterwards.

In one case of a burn in a boy of
14, nearly the whole of the thigh
A leg was a granulating mass, part of the other leg being burnt also. There was not much room for obtaining grafts so J. Church grafted the thigh only. The lower part had to be burned on the third day but I left the grafts until the 5th day. Although it was rather foul most of the grafts took. Later I Church grafted the leg in part & finished it with Rousdon grafts. Some months afterwards the scar on the lower part of the leg broke down but healed up again with rest in bed. Amputation, which has been advised in intractable ulcers need not be resorted to nowadays.

Marple
Cheshire

April 2, 1900