

Leg ulcers in the eighteenth and early nineteenth centuries. II. Treatment.

I. S. L. LOUDON, DM, FRCGP

Wellcome Research Fellow, Wellcome Unit for the History of Medicine, University of Oxford

In a previous article it was shown that in the eighteenth and early nineteenth centuries leg ulcers were extraordinarily common compared to today.¹ It was also shown that the underlying pathology was much more varied and that ulcers due to venous insufficiency (varicose ulcers), although they existed, probably formed only a minority of cases. The relative youth of leg ulcer patients and the excess amongst males was demonstrated, and the part played by ascorbic acid deficiency was discussed, not only in the case of leg ulcers among men in the Navy, where true scorbutic ulcers were very common, but also amongst the civilian population. Little was mentioned in that paper, however, about methods of treatment, and it is that aspect which is discussed here.

Introduction

HISTORICAL accounts of medical treatment are apt to seem quaintly archaic—and certainly that could be said about some of the methods of treating leg ulcers. But to describe past treatment solely for its quaintness would be a trivial undertaking. The main importance of historical descriptions of medical and surgical treatment lies in the way in which they can illuminate past ideas about the nature of disease, particularly when methods are changing and are the subject of controversy.

Methods of treatment may be determined by past authority (“it has always been done this way”), by empiricism (“we do not know why this treatment works, but it seems to”), or by rationality, where treatment is logically based on current pathological theory. All three approaches were evident in the treatment of leg ulcers in the period with which we are concerned,² but there was a gradual change to an increasing emphasis on rational methods. This is illustrated by the decline in the influence of humoral pathology, which dominated the management of leg ulcers until the last decades of the eighteenth century.

© *Journal of the Royal College of General Practitioners*, 1982, 32, 301-309.

The humoral theory and leg ulcers

In essence, the humoral theory held that ulcers anywhere, but especially ‘inveterate’ ulcers of the legs, were the result of acrid humors in the blood. Not only could the humors cause ulcers, but the ulcers—even if they had an obvious origin such as a cut or graze—acted as drains through which such humors could escape. The corollary was that the surgeon, faced with a chronic ulcer, was forced to consider the wisdom of curing it. Alleviation was justified, but complete healing ran the risk that the acrid humors, denied their exit through the ulcer, could accumulate, ascend to the lungs or other organs and cause serious illness or death. Thus the chronic ulcer was at one and the same time a serious disability and an essential requirement for continued health. A balancing act was demanded of the surgeon in which he had to achieve maximum alleviation short of cure. A anonymous article published in 1764 expressed current views on this subject well. Surgeons were advised to think:

“whether a conglutination of inveterate Sores or Ulcers in the feet and legs can be effected with safety, because there are instances in the writings of most experienced physicians where the consequences of such cases have been very severe and dangerous disorders and oftentimes most certain and present death”.

This was most likely to occur when the patient was “far advanced in years and of a very bad habit of the body”, for then the ulcers were “a great means of health, as being so many issues or outlets by which nature is accustomed to expel the noxious or superfluous humors”.³

There were two ways round this dilemma. One was to prevent an ulcer that appeared too eager to heal from doing so. If a long-discharging ulcer dried up too quickly, ‘topics’ should be applied to it:

“roots of gentian, or Florentine orris bruised; or if these prove not strong enough, the root of Hellebore reduced to powder or in globules; or, in the last place, if this be ineffectual, powder of Cantharides, or a globule of blister-plaster of the shops. By this method such ulcers are stimulated and irritated to such a degree as some-

times to flow afresh, and so to begin to relieve the patient from the malignant humors by which he was oppressed.”

But if this failed and the ulcer remained dry “there remains no hope for the patient, whose case is desperate and death unavoidable”.³ This was unduly pessimistic, because there was always the second and usually preferred method of ‘opening an issue’ (making an artificial ulcer), thus providing an alternative exit for the humors. Generally a ‘pea-issue’ was used. For this a fold of skin was pinched up and an incision made into which a number of peas were inserted to keep it open. The size of the ‘issue’ could be controlled by varying the number and size of the peas. Older authors thought the issue should be sited as close as possible to the ulcer; later, however, the recommended sites were the nape of the neck, the front of the upper arm, the hollow above and inside the knee or on either side of the spine, but never over a belly muscle, a thinly covered bone or near a large blood vessel. With such an issue discharging freely, it was safe to heal a leg ulcer.⁴ Moreover, some patients had great faith in the value of ‘issues’. Samuel Cooper noted as late as 1838 that: “Many persons are never in health, or at least fancy themselves always ill, unless they have an issue formed in some parts of their body or another.”⁵

The humoral theory also had a dire influence on the treatment of wounds, for wounds were a form of ulcer, and the two were often considered together. It was orthodox surgical practice to keep the edges of a wound open with ‘tents’ or leaden tubes so that they would suppurate.⁶ But John Bell⁷ in 1801 told his students that it was better, and quite safe, to stitch together the edges of a wound and encourage healing by first intention. It had been shown, he said, that tissues brought into apposition would firmly adhere, heal quickly and the patient would suffer less pain and inconvenience and come to no harm. It was a new and very important change in surgical practice, and Bell wrote of the underlying principle that:

“The universal doctrine and practice of adhesion—that skin will adhere to skin, flesh to flesh and bone to bone . . . one part only of the human body, cartilage, will not adhere . . . has done more for surgery in a few years . . . than any other general observation, not excepting even the greatest of all discoveries—the circulation of the blood.”

Although the humoral theory persisted in the mind of the public for a long time, and there are remnants of it even today,¹ it can be said as a rough generalization that, as far as medical men were concerned, it was discarded by the end of the eighteenth century. There were, of course, exceptions. As early as 1751 Ingram probably enraged his colleagues by writing that the supposed danger of healing old ulcers was nothing more than a convenient excuse by surgeons for their inability to cure them.⁸ Conversely, there were surgeons writing well into the nineteenth century who preached the

dangers of humors in the blood if old ulcers were healed. A variant of the humoral theory—the menstrual ulcer, where, in women, amenorrhoea caused leg ulcers as an alternative exit for the menses—persisted in medical teaching much longer.⁹

Nevertheless, the practice, as well as the words of surgeons, showed clearly by the end of the eighteenth century that most were no longer influenced by the humoral theory. By then a new vigour and optimism in the treatment of leg ulcers was manifest in surgical writings. The methods used for treating leg ulcers were general and local. General treatment meant that, in those cases where there was an identifiable underlying disease (in practice, syphilitic, scorbutic and scrophulous ulcers) it must be treated first; local treatment consisted of local applications to the surface of the ulcer, support bandaging, operations on varicose veins and—as a last resort—amputation of the leg.¹⁰ All these methods had been used sporadically for a long time but the nineteenth century saw new methods introduced in support bandaging and surgery directed at varicosities.

Local applications

The list of substances that have been applied to the surface of ulcers in the vain hope of curing them is endless. No one has ever written so forcibly on this aspect of treatment as John Bell of Edinburgh, who commented that:

“It is impossible to be serious while we enumerate the thousand remedies which have been applied to ulcers. . . . Ulcers have been dressed with precipitate, calomel, alum, vitriol, zinc, verdegrease, pulvis fabinae and other *devilish drugs*; they have been powdered with sugar, charcoal, assafoetida, rhubarb and other *innocent drugs*; they have been plastered with turpentine, balsams, mel mercuriale, decoctions of walnut leaves in sugar . . . or bladders have been fixed about ulcers full of fixed air, carbonic air, vital air; what indeed is there that has not been tried? If you wish to see all this farrago of empyricism treated with the pomp and solemnity of science, look at Mr Hume’s treatise on Ulcers in the Surgical Transactions . . . the precious additions we have from Mr Hume are — tartar emetic, true turkey rhubarb, chalk, Paris Plaster, cassada root, lapis calaminaris, ipicacuanha, the flour of mustard, gentian, camomile, columba root. But I daresay the reader has had enough of this.”

John Bell’s wide practical experience, his sharp perception and his outspoken nature led him to a state of therapeutic nihilism; to him the only effective remedy seemed to be rest and elevation of the leg—and that had its limitations: “An ulcer is cured merely by keeping the diseased limb in the horizontal posture; the patient walks abroad, and his disease returns! The surgeon sees the ulcer alternately cured and breaking out.” But in spite of this, surgeons continued to proclaim successes with local remedies, adding to the “farrago of empyricism”. Many examples could be quoted, from carrot

poultices used at the Radcliffe Infirmary, Oxford, to the surgeon who, believing that ulcers arose from lack of local nourishment, painted them with a kind of soup containing flour, chalk, powder of tragacanth and acacia.¹¹ It is doubtful if many were impressed at the time by these "certain cures". Instead, the centre of interest at the beginning of the nineteenth century was the vigorous debate on the relative merits of enforced rest on the one hand, and support bandaging and exercise on the other.

Rest versus exercise and support bandaging

Many authors before John Bell had recognized the value of rest and elevation of the leg in the cure of ulcers. John Aikin had observed in 1771 that ulcers could always be cured by "a strict observance of rest and a reclined posture, which can scarcely be trusted to without hospital confinement . . . [although] the cure generally only stands good while the confinement lasts".¹²

The Inquirer in an admirable review in 1805 contrasted the views of Benjamin Bell and Everard Home as supporters of rest with those of Whatley and Underwood as supporters of exercise.¹³ The latter school employed bandaging or some kind of support stockings, and indeed such methods had been in use sporadically for centuries.¹⁴ Now, at the beginning of the nineteenth century the time was ripe for the discovery of an effective method that could both relieve the patient of the tedium of prolonged rest and the hospitals of the outrageous demands on their beds by the flood of ulcer cases demanding admission.

When Baynton came up with such a method it was, therefore, an instant success. Of all the methods for treating ulcers used in the nineteenth century it was probably by far the most effective and it can be considered the ancestor of the paste-impregnated bandages in use today. Thomas Baynton of Bristol, the son of a Bristol surgeon, was poor and rough in his youth, affecting dirty worn leather breeches "with clothes and hat in keeping".¹⁵ In 1783 he unsuccessfully applied for a vacant surgeoncy at Bristol Infirmary and he remained rough and obscure until the publication of his treatise on ulcers of the legs in 1797.¹⁶ A second edition appeared two years later. Convinced that "rest in a horizontal posture, exercise, precipitate, bandages and every other remedy . . ." had all failed, he set out to find a cure that allowed the patient to walk around and conduct his business.

Baynton's method consisted of making adhesive strips 2 in wide and long enough to encircle the leg with 4 or 5 in left over. The centre of each strip was placed on the opposite side of the limb to the ulcer and the free ends brought across the ulcer and pulled "as tight as the patient can well bear". Overlapping strips were applied from an inch below the ulcer to a point 2 or 3 in above it. Then a soft calico bandage 3 in wide and 4 or 5 yd long was placed over the strips and applied from the

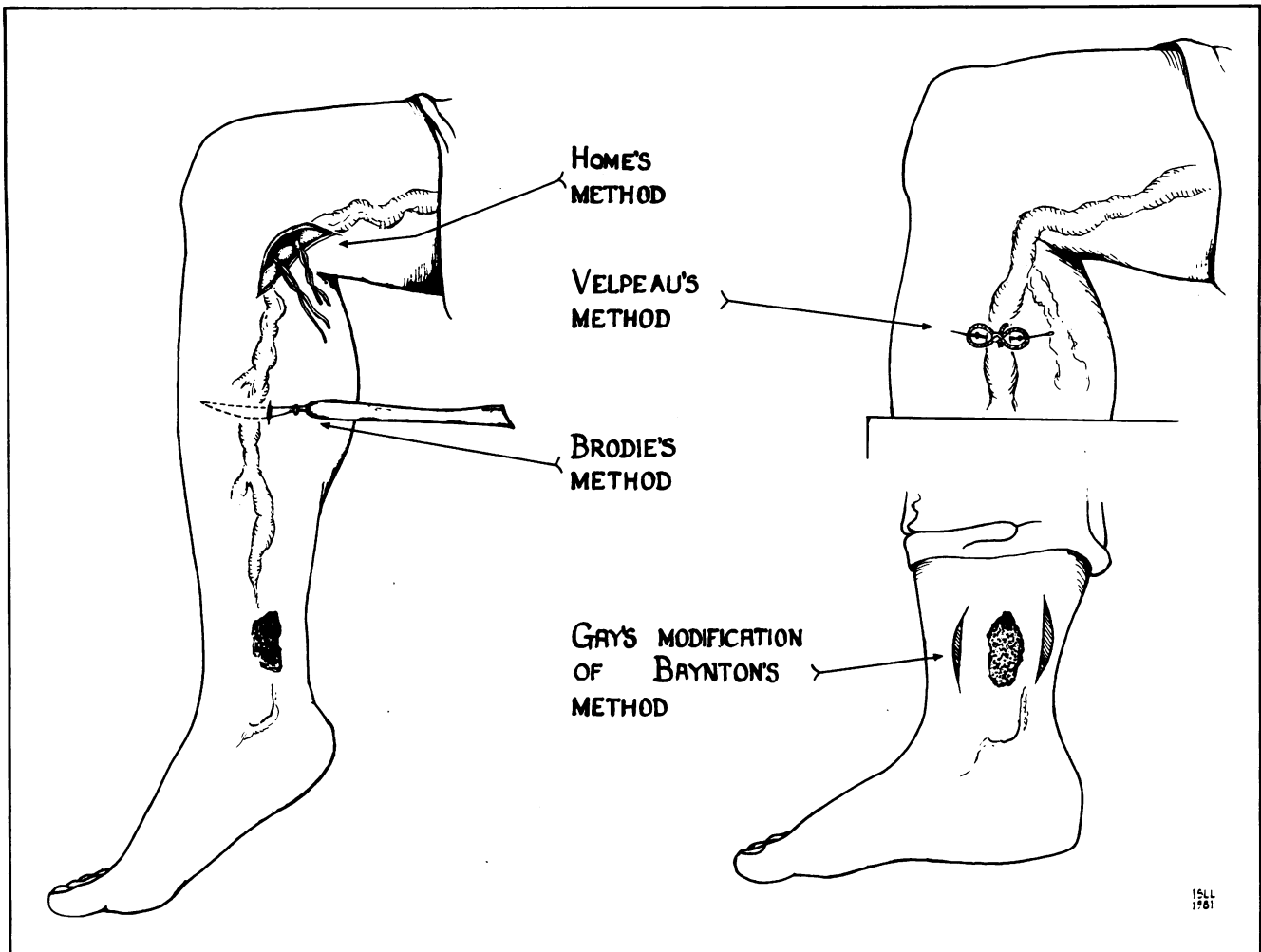
roots of the toes to just below the knee. If the ulcer was hot or inflamed, cool water was poured on the outside of the dressing. Within a year a surgeon to Manchester Infirmary proclaimed this method as a satisfactory alternative to inpatient care.¹⁷

Baynton became well known and, with the confidence of the successful, maintained that he could always "command ulcers to get better—none dared disobey him in the end". His method is constantly referred to throughout the nineteenth century. In 1873, a surgeon wrote that: "The plan I adopt is practically the same as that recommended by Baynton nearly eighty years ago, but with the important modification of using it antiseptically"; he soaked his strips in carbolic acid.¹⁸ One result of Baynton's method was that bandaging, previously used mainly to hold dressings in place, became elevated to a fine art. Abernethy maintained that "whoever can apply a bandage most perfectly and securely round a limb will cure these ulcers best".¹⁹ The function of bandaging was in the first place to draw the edges of the ulcer together as close as possible, in the second to compress and support surrounding tissues and—as interest grew in varicose veins—to support the veins and prevent their distension.

The varicose ulcer

That there might be a link between leg ulcers and varicose veins had been suggested long before our period of surgical history. Anning maintains that Wiseman in 1676 was the first to use the term 'varicose ulcer', but even before that surgeons had operated on veins to cure ulcers: Paré, for instance, in the sixteenth century.¹⁴ Nevertheless, amongst the many categories of leg ulcers found in the classifications of eighteenth-century writers, varicose ulcers are conspicuous only by their general absence until the end of the century,²⁰ and operations on veins for the cure of ulcers were very rare. Either leg ulcers due to vein disease were uncommon, or the part played in ulcer pathology by veins was just not recognized; it is difficult to decide which of these two factors was more important, but probably both played a part. At all events, it can be said that Sir Everard Home re-discovered the concept of the varicose ulcer, and published his views in his treatise in 1797.²¹

"The operation of taking up the vena saphena", wrote Home, "may be performed in a very short time and is attended with less pain . . . than it would be natural to expect." Moreover, Home was convinced it was safe. In this operation a fold of skin overlying the knee joint was lifted and incised to expose the varicose vein. With a blunt silver needle, ligatures were passed round the vein and tied, and the long ends were left projecting through the wound, which was closed with plasters (see Figure). The ligatures were removed on the fifth or sixth day, but the patient was kept in bed for some time and, in this, as in other operations on veins, the period of enforced rest may well have led to healing



Surgical techniques for varicose veins and leg ulcers, 1790-1860.

of the ulcer. The operation was widely adopted as one that was simple, safe and effective until, some years later, first one and then a series of deaths from septic phlebitis were reported.²² By 1823 the operation was condemned as too dangerous by Abernethy, Astley Cooper and Home himself.²³

Other methods were tried. Caustic was applied to the skin directly over a vein; the results were messy and the pain intense. Astley Cooper simply punctured the vein in a few places and let some of the blood out. Abernethy cut straight down through the skin, severing the vein, which caused troublesome bleeding and wounds that were slow to heal. Benjamin Brodie, originally Home's pupil at St George's Hospital, devised a more sophisticated operation. Using a thin-bladed slightly curved bistoury, sharpened on the convex side, he passed the blade through the skin and over the vein with its flat side towards the vein and then withdrew it, turning the blade as he did so and severing the vein²⁴ (see Figure). The advantage was the small skin incision. A curious method was used in France where it was associated with the name of a surgeon called Velpeau, and it became popular in England during the mid-nineteenth century.

It consisted of introducing a bent needle or pin through the skin, under the varicose vein, and out the other side. A figure-of-eight ligature was tied round the projecting ends, obliterating the vein, and the pin and ligature left *in situ* for a few days²⁵ (see Figure).

Even by the surgical standards of the time it must be admitted that these procedures were crude; many surgeons avoided all operative measures because there was no clear understanding of the role, if any, of varicose veins in the pathogenesis of leg ulcers. It was generally agreed that varicose veins, if present, could hinder the healing of an ulcer, but it was much less certain that they were a prime cause. These doubts were understandable in view of the fact that there was, throughout our period, a belief that ulceration was the manifestation of a single pathological process, wherever it occurred. Hunter had suggested that ulceration was a process of absorption of some part of the body through the lymphatics. Others felt that the underlying process was one of liquefaction of tissues and sloughing, in which the veins played a part. It was generally agreed to be a mysterious process, and surgeons and pathologists sought a single cause in, for example, leg ulcers, with or

without varicose veins, ulcerating carcinomata (such as carcinoma of the breast), mouth ulcers, ulcers from disease of bone and joint and ulcerating glands of the neck.²⁵ If there was a single cause for ulcers everywhere, varicose veins could only be a contributory factor, if they played any part at all. Much that was written on this subject in the early nineteenth century was therefore muddled and speculative; but gradually the concept of the 'varicose ulcer' became firmly established and, by the middle of the century, few surgeons had any doubt that varicose veins were the cause of many leg ulcers. It was at this time that the remarkable work of a little-known surgeon, John Gay, was published. Throughout his adult life John Gay pursued an interest in pathological research based on meticulous anatomical dissection, and he concentrated mainly on the anatomy and pathology of the veins of the leg.²⁶

In 1855 he wrote that:

"The frequent coincidence of indolent ulcers and varicose veins . . . gave rise to the belief that such ulcers are directly due to the disease in the veins; and to the practical inference that it is only necessary to obliterate the veins and the ulcers will heal. The corollary has not, however, been fully borne out by experience."

In a paper published in the *Lancet* in 1868, John Gay took this further. When a vein was ligated for the cure of a leg ulcer, he wrote: ". . . with what gratification the cicatrisation of the ulcer [is] hailed in almost every case". But if these cases were followed up, it was generally found that:

"The ulcer and varicose veins have both reappeared. Are we satisfied that even the temporary benefit was due to the ligature? I confess, I am much more disposed to attribute it to the rest and the other means that were simultaneously employed."

He was led to the conclusion, "That there are no substantial grounds for accrediting ulcers on legs with varicose veins, to the diseased veins in the relation of effect; that in fact the varicose ulcer, in the sense in which it is usually understood, is a fiction". It was a bold assertion, and it seems to have fallen on deaf ears. Indeed, the term 'varicose ulcer' is still often used today, and the correct term—'venous ulcer'—which Gay was the first to use, is only slowly becoming accepted.

Gay arrived at these conclusions by considering the inconsistencies of the theory of the varicose ulcer. Thus he noted that large ulcers of the varicose type could exist without any varicose veins, and that, conversely, large varicose veins could persist for years without any ulcers or even bronzing of the skin. Moreover, even when ulcers and varicosities co-existed there was no consistent association between the severity of the two conditions. He also noted that the veins are generally "most tortuous and salient in that part of the limb that is otherwise healthy. As they approach the sphere of diseased action so they generally become less obvious", and it was from these inconsistencies that he was led to examine the deep

veins of the leg. There he discovered that there was an invariable association between varicose ulcer (or skin bronzing) and deep vein disease, and he concluded that:

"Ulceration is not a direct consequence of varicosity, but of other conditions of the venous system, with which varicosity is not unfrequently a complication, but without which neither one or other of these affections of the skin (bronzing or ulceration) is met with."

John Gay even recognized the existence of the perforating veins of the lower leg and failed only in not realizing their importance in the pathogenesis of ulceration of the lower leg. But it is clear that he contributed much more to the understanding of varicosity and leg ulcers than anyone before. His accounts of his research are detailed and closely argued and his contemporaries probably found them hard to follow. Moreover, they were of no immediate practical value, since operation on the deep veins was out of the question. Gay himself, in his surgical practice, virtually abandoned all operative procedures on varicose veins except for the occasional use of Velpeau's method with the curved needle. He did, however, use Baynton's method of adhesive strips, adding a modification. He had noticed that the main purpose of the method had been to draw the edges of the ulcer together, but that usually they were rigid from scarring of the skin. He therefore made incisions in the skin of the leg parallel to the long axis of the ulcer and about an inch away from it (see Figure). By allowing this incision to gape open, the edges of the ulcer could more easily be approximated.

When he died, very little notice was taken of Gay's brilliant work on leg vein disease; instead, he was recorded as the surgeon who invented a minor modification to the standard operation for femoral hernia.²⁷ Gay's work was extended by John Homans in 1916–1925,²⁸ and acknowledged in our own time by Cockett and his colleagues at St Thomas's Hospital in London.²⁹ In general, however, the detailed life-time of research and the originality of thought of John Gay, who advanced the understanding of leg ulcers out of the nineteenth and well into the twentieth century, has not received the recognition it deserves.

Brief biographical notes

Abernethy, John (1764-1831)

Elected surgeon to St Bartholomew's Hospital at the age of 23; he can be said to have founded the medical school there. His fame rested on his teaching rather than his skill or originality in anatomy or surgery.

Baynton, Thomas (1761-1820)

Son of a Bristol surgeon, he practised in Bristol all his life. He built a high reputation solely on his treatment of ulcers: the only true ulcer specialist in this history.



NEW
Secadrex
acebutolol and hydrochlorothiazide
**Low dose, once daily
in hypertension**

Prescribing information

Uses Mild and moderate hypertension.

Dosage One Secadrex tablet once daily in the morning is sufficient for most patients. If response is inadequate, dosage may be increased to two Secadrex tablets daily.

Contra-indications Cardiogenic shock, heart block, severe kidney or liver failure, hypersensitivity to hydrochlorothiazide. Should not be used with verapamil or within several days of such therapy or in patients with insulin-dependent diabetes, gout or hyperuricaemia.

Precautions In asthmatic patients, in the presence of bradycardia, with catecholamine-depleting drugs such as reserpine, signs of heart failure, in anaesthesia. If given concurrently with clonidine, the clonidine should not be discontinued until several days after withdrawal of Secadrex. Patients should be monitored periodically for clinical signs of fluid or electrolyte imbalance.

Pregnancy Should not be given during pregnancy or lactation unless the physician considers it essential.

Side-effects No serious side-effects have been reported. Those common to beta-blockade - hypotension, bradycardia, gastrointestinal effects and depression have been met with infrequently. Skin rashes and photosensitivity due to hydrochlorothiazide have been reported as have blood dyscrasias including thrombocytopenia but these are rare. There have been reports of skin rashes and/or dry eyes associated with the use of beta-adrenoceptor antagonists. The reported incidence is small and in most cases the symptoms have cleared when treatment was withdrawn. Discontinuation of the drugs should be considered if any such reaction is not explicable. Cessation of treatment with a beta-blocker should be gradual.

Drug-interactions Tricyclic antidepressants and M.A.O. inhibitors should not be used concurrently with Secadrex. Lithium should generally not be given to patients receiving diuretics.

Presentation 'Secadrex' tablets contain acebutolol 200mg and hydrochlorothiazide 12.5mg.

Basic NHS cost (Nov. 81) Secadrex (PL0012/0137) 26p per day. Further information is available on request. 'Secadrex' is a trademark

1. *Am. Heart J.* (1980), 99, 443-445 2. *Am. J. Cardiol.* (1980), 46, 301-305
3. Taylor, S.H., Symposium, Malta, 1974 4. *Curr. Med. Res. Opin.* (1981), 7, 526-535

Secadrex is a product of British research and manufacture.

M&B May & Baker  May & Baker Ltd.
Dagenham Essex RM10 7XS
MA 9167

Bell, Benjamin (1749-1806)

Trained in Edinburgh and appointed surgeon to the infirmary in 1772 at the age of 23, a post he held for 29 years. His main publications were his treatise on ulcers (1778) and his *System of Surgery* in 6 volumes (1782-1787). Both went into seven editions and were translated into French and German.

Bell, John (1763-1820)

No relation to Benjamin Bell, but older brother of Sir Charles Bell (of Bell's palsy). In 1790 he established himself as a lecturer in anatomy and surgery in his own lecture theatre and museum. Although he was the leading surgeon in Edinburgh for 20 years, he was excluded from the university and infirmary and conducted a long and famous vitriolic quarrel with James Gregory, the professor of medicine. A vigorous, pugnacious, lively teacher and a consummate draughtsman, like his brother Charles.

Brodie, Sir Benjamin Collins (1783-1862)

Pupil of Sir Everard Home; surgeon to St George's Hospital; Copley medallist at age 28; President of the Royal College of Surgeons; President of the Royal Society; first President of the General Medical Council in 1858; surgeon to George IV and William IV; baronet. Perhaps the most distinguished surgical career ever.

Cooper, Sir Astley Paston (1768-1841)

Born near Norwich. Demonstrator in anatomy at St Thomas's Hospital 1789; surgeon at Guy's 1800; Copley medallist 1802; founded Medico-Chirurgical Society, 1805; President, Royal College of Surgeons 1827; surgeon to the King. The most famous surgeon of his generation.

Cooper, Samuel (1780-1848)

Trained at St Bartholmew's Hospital 1800; served as surgeon at Waterloo; Professor of Surgery at University College Hospital 1831-1848. His dictionary of surgery (1st edition 1809) was an instant and great success and went into seven carefully revised editions.

Gay, John (1813-1885)

Born at Wellington, Somerset; trained at St Bartholmew's; surgeon to the Royal Free Hospital from 1836-1854, when he resigned after a dispute; appointed surgeon to the Northern General Hospital in 1856. An exceptionally kind, genial and popular surgeon.

Home, Sir Everard (1756-1832)

Pupil and brother-in-law of John Hunter. Surgeon to St George's Hospital 1793; surgeon to the King 1808; baronet 1813; first President of the College of Surgeons 1822. His reputation was tarnished by the unforgivable destruction of Hunter's manuscripts and the use of material from these manuscripts as his own.

Ingram, Dale (1710-1793)

First practised in Reading, Berkshire; moved to the Barbados and then to London. Elected surgeon to Christ's Hospital in 1759. Reputed to have repaired successfully an abdominal wound penetrating the bowel after washing the intestines with hot claret.

Sharp, Samuel (?1700-1778)

Apprenticed to William Cheselden in 1724; surgeon to Guy's Hospital 1733-1757. Sir James Paget said of him: "He was a thoroughly informed surgeon, well read, observant, judicious, a lover of simplicity, wisely doubtful . . . I believe he was as good a surgeon as Hunter."

References and notes

1. Loudon, I. S. L. (1981). Leg ulcers in the eighteenth and early nineteenth centuries. *Journal of the Royal College of General Practitioners*, 31, 263-273.
2. Bell, Benjamin (1778). *A Treatise on the Theory and Management of Ulcers*. Edinburgh. Bell complained in this, probably the most influential of all treatises on ulcers published in the eighteenth century, that the methods in use for treating ulcers were so contradictory "that even the oldest practitioners find it impossible to reconcile them to reason".
3. Anon. (1764). A very judicious method of treating old ulcers especially in the legs. *The Medical Museum*, 3, 537-541. See also: Sharp, Samuel (1739). *A Treatise on the Operations of Surgery*. London; Bell, Benjamin (1789) *A Treatise on the Theory and Management of Ulcers*. 2nd edn. Edinburgh.
4. Bell, Benjamin (1778). See reference 2. "By increasing or diminishing the size and number of peas made use of, the quantity of matter may be increased or diminished at pleasure." See also: Morris, Robert & Kendrick, James (1807). *The Edinburgh Medical and Surgical Dictionary*, 2, Edinburgh.
5. Cooper, Samuel. (1838). *A Dictionary of Practical Surgery*. 7th edn. London.
6. The common teaching was that the first stage of wound healing was that of a serous 'or stinking' discharge, the second the filling up with granulations of flesh, and the third 'skinning over' or 'cicatrization'. Sharp, Samuel (1739). *A Treatise on the Operations of Surgery*.
7. Bell, J. (1801). *The Principles of Surgery*, 1.
8. Ingram, D. (1751). *Practical Cases in Surgery*. London. Likewise Rowley in 1774 was an exception in denying the danger of healing old ulcers, and moreover, maintaining that the unnecessary and "almost universal practice" of opening an issue was something he had never used because "the pain occasioned by the issue is equal to that of the ulcer when in its worst state." Rowley, William (1774). *A Treatise on the Cure of Ulcerated Legs without Rest exemplified by a Variety of Cases in which Laborious Exercise was used in the Cure*. London.
9. Cutler, Henry (1845). On ulcers, their cause and formation. *Lancet*, 2, 262-263. Also: Critchett, G. (1848). The nature, cause and treatment of ulcers of the lower extremity. *Lancet*, 2, Lecture 6, 661-664.
10. There is no doubt that in intractable cases amputation was resorted to, and in general this seems to have been done in cases of mortification (gangrene), chronic bone disease or where pain was insufferable. The author's impression is that there were more amputations performed for leg ulcers in the eighteenth century than in the nineteenth, but there are too few statistics to check the validity of this impression. See Bromfield, William (1773). *Chirurgical Observations and Cases*, 2 Vols., 1. London.
11. Walker, Richard (1809). Observations on the remarkable efficacy of carrots under a new mode of application, in the cure of ulcers and sores. *Philosophical Magazine*, 34, 281. Cowen, P. (1872). On a new method of treating ulcers. *Lancet*, 2, 705.
12. Aikin, J. (1771). *Thoughts on Hospitals*. p.40. London.
13. *The Inquirer* (1805). What are the comparative advantages of the different modes proposed for the treatment of ulcerated legs? *Edinburgh Medical and Surgical Journal*, 1, 187-193.
14. See Anning, S. T. (1976). The historical aspects. In: *The Pathology and Surgery of the Veins of the Lower Limb*. by Dodd, H. & Cockett, F. B. 2nd edn. Churchill Livingstone. In this valuable chapter Anning surveys the history of ideas on leg ulcers, varicose veins and deep vein thrombosis from earliest records to the present century.
15. Munro Smith, G. (1917). *A History of the Bristol Royal Infirmary*. Bristol.
16. Baynton, Thomas (1797). *Descriptive Account of a New Method of treating Old Ulcers of the Legs*. Bristol.
17. Simmons, W. (1798). Observations on Baynton's method of treating ulcers of the legs. *Annals of Medicine*, 2, 339.
18. Gordon Black, J. (1873). On the treatment of ulcers of the leg. *British Medical Journal*, 1, 608.
19. Abernethy, J. (1830). *Lectures on the Theory and Practice of Surgery*. London.
20. For instance, there is no mention at all of varicose ulcers in Baynton's treatise (reference 16 above), Benjamin Bell's treatise (reference 2 above) or in Whatley, Thomas (1799). *Practical Observations on the cure of Wounds and Ulcers of the Leg without Rest*. London. Even in 1848, Henry Chapman in *The Treatment of Obstinate Ulcers and Cutaneous Eruption of the Leg without Confinement* (London) did not recognize varicose ulcers as a separate category; nor did George Critchett (1848) in his Clinical Lectures on the cause and treatment of ulcers of the lower extremity. Lecture 1. *Lancet*, 2, 397-398. In fact the concept of the varicose ulcer was only accepted gradually between 1800 and 1850.
21. Home, Everard (1797). *Practical Observations on the Treatment of Ulcers on the Legs, Considered as a Branch of Military Surgery*. London. When he wrote this treatise, he described his method of ligaturing the 'vena saphena' and was convinced he was the first ever to have done so. However, while his treatise was at the printers, Matthew Baillie pointed out to him that the same operation had been carried out by 'Parey' (sic). Home acknowledged this fact in the treatise but was clearly not pleased with this knowledge.
22. Oldknow, Henry (1808-1809). Case in which the operation of tying the Vena Saphena for the cure of an old ulcer of the leg terminated fatally. *Medical and Physical Journal*, December 1808-June 1809, 422-424. The editor congratulated the author for his unusual courage in submitting the account of a surgical tragedy in an operation previously thought to be without danger, so that others could be warned. Henry Oldknow was one of the Honorary Surgeons on the staff of the Nottingham General Hospital.
23. Abernethy, John, Cooper, Astley & Home, Everard (1823). Heads of lectures on ulcers. *The Weekly Medico-Chirurgical and Philosophical Magazine*, 1, 5-6, 24-25, 39-40, 54-55.
24. Brodie, Benjamin (1816). Observations on the treatment of varicose veins of the legs. *Medico-Chirurgical Transactions*, 7, part 1, 195-210; and (1846) *Lectures Illustrative of Various Subjects in Pathology and Surgery*. London: Longmans.
25. Dodd, A. T. S. (1839-1840). The treatment of varicose ulcers. *London Medical Gazette*. pp. 469-472. Also: Coulson (1855) *Medical Times and Gazette*, 10, N. S., 114. After this method had been tried experimentally on animals by Davat, Velpeau treated a series of 25 cases. Sometimes several ligatures were applied simultaneously on the same leg by this method. A lengthy account of the state of ideas on ulceration in 1838 can be found in Samuel Cooper's *Dictionary of Surgery* (reference 5 above).
26. See Gay, John (1855). *A Memoir on Indolent Ulcers and their Surgical Treatment*. London; (1868). *On Varicose Disease of the Lower Extremities. The Lettsomian Lectures for 1867*. Churchill: London; (1868). On varicosity and ulcer on the lower limb. *Lancet*, 1, 460-461, 495-496.
27. Gay, John. Obituary notices. *Lancet* (1885), 2, 600-601; *Transactions Medico-Chirurgical Society* (1886), 69, 13-15; *Medical Times* (1885), 2, 449-450; *British Medical Journal* (1885), 2, 624-625.
28. Homans, John (1916). *Surgery, Gynaecology and Obstetrics*, 22, 143; (1922) Varicose veins and ulcer. *Boston Medical and Surgical Journal*, 187, 258-266; (1925) The operative treatment of varicose ulcer. *Boston Medical and Surgical Journal*, 192, 379-384.
29. Cockett, F. B. (1955). The pathology and treatment of venous ulcers of the leg. *British Journal of Surgery*, 43, 260-278; and reference 14 above.

Acknowledgement

The work on which this paper is based forms part of a study of care and morbidity from 1770 to 1850 which is supported by a grant from the Wellcome Foundation. The author acknowledges with gratitude the generosity of the Trustees of the Wellcome Foundation.

Address for reprints

Dr I. S. L. Loudon, The Mill House, Wantage, Oxon.