

Hyposensitivity To Pain In Peptic Ulcer

E. DAVID SHERMAN, M.D.
Sydney, Nova Scotia

IN his classical paper on "Observations on Individual Sensitiveness to Pain," Libman¹ has shown the importance of gauging the patient's sensitivity to pain in order that the symptoms may be properly evaluated in reaching a correct diagnosis. The knowledge of the patient's sensitivity to pain is also of great assistance in instituting the proper regimen of treatment.

When pain is present, it may be regarded as the central principle in the diagnostic arch and usually plays a prominent role in the disturbances due to organic disease, in contrast to the greater number of disturbances which are attributable to functional origin. In recording the history, careful inquiry is made concerning the character, site, degree, radiation or extension, methods of relief of, and modes of aggravation of, the pain or discomfort. It is important to note any significant changes in these symptoms since the pain was first felt. Mural origin of the pain must be excluded, if there are no associated gastrointestinal disturbances. In older patients, usually men, the relationship of the abdominal pain to exertion should be established, for cardiac disease may be made manifest in this way.

Eusterman and Balfour² state that highly nervous, hypersensitive, ulcer-bearing patients may experience episodes of pain severe enough to imply perforation that is not demonstrable at operation, whereas the more stolid patient, who has a penetrating or walled off, perforated lesion may never have experienced acute pain.

Libman's test for sensitivity to pain is carried out by first pressing the thumb against the tip of the mastoid bone and then slipping the finger forward and pushing against the styloid process. Pressure on the normal mastoid bone causes no pain and therefore serves as a control. It is important not to rub the bone, because rubbing the periosteum of any bone is apt to evoke pain. Pressure in the direction of the styloid process is painful to some individuals and not to others. The sensitive point is really not the styloid process but a branch of the auricularis magnus nerve. For the sake of brevity, however, the term styloid pressure is employed.

According to the response of the test, individuals are classed as:

1. 0 or + sensitive. (Hyposensitive).
2. 3 + sensitive. (Hypersensitive).

The first group comprises those who give no evidence of pain, and who state that they feel none. This group also includes those who evidence little pain, but who in response to questioning say that they feel a little pain. Group 2 represents those who give evidence of marked pain on performing the test.

Some clinicians have argued that the Libman test is only a rough estimation of the person's sensitivity to pain. The degree of pressure that the finger exerts is not determined and is, therefore, an uncontrolled variable in the test. In 1939, Hollander³ suggested an ingenious instrument that consists of a piece of grater which is sewed to the contact surface of an ordinary blood pressure cuff. The cuff is applied in the usual way to the patient's arm and the cuff

is inflated as in taking the blood pressure. The sensitivity level is indicated by that point at which the patient winces or cries out.

HYPOSENSITIVITY.

While it may happen that a sensitive patient may show the same clinical picture as a hyposensitive one, and vice versa, there is a great tendency for the latter to experience less or none of the pain of a given disease and to present irregular radiations of pain. The hyposensitive patient is also apt in the case of visceral disease, to suffer more in the way of symptoms due to a disturbance of the autonomic nervous system, a number of which symptoms are brought about by reflex mechanisms.

Libman states that instead of pain, the hyposensitive patient may have what is called substitution symptoms. In this group are included all symptoms that might be considered representative of pain, such as pressure, burning, numbness, prickling, tingling and other forms of paresthesia. That ticklishness may represent pain is suggested by the observation that pressure over a diseased organ may elicit laughter in a hyposensitive patient instead of pain.

Hyposensitive patients suffering from peptic ulcer may suffer little or no pain, speaking only of fulness, pressure, burning, coldness, nausea, "gas," depression and weakness (with some, only in relation to meals) headache, dizziness and the like. The patients who perforate or bleed with little or no previous history are usually hyposensitive. The same holds true for cases of pyloric stenosis due to ulcer.

Libman believes that in hyposensitive patients, the pain impulses are delayed in the autonomic nervous system or linger there, while in the case of the hypersensitive patient, the impulses travel more directly to the central nervous system. As previously stated, the hyposensitive patient is apt to present more in the way of symptoms referable to the autonomic nervous system, a number of which are brought about by reflex mechanisms. Instead of pain, or together with little pain, there may be present symptoms due to spasm of the cardia, the pylorus, ileocaecal junction, sigmoid flexure, etc. Thus there may be prominent or predominant in the clinical picture such manifestations as aerophagia or eructation, yawning, coughing, choking, hiccups and sneezing.

For example, renal and ureteral conditions may present the picture of a more or less marked intestinal obstruction and not be accompanied by the pains characteristic of them. In cases of chronic obliterating appendicitis, the symptoms present may be entirely ascribable to spasm of the transverse or descending colon. In a case of coronary artery thrombosis, aerophagia may be the most important symptom. Cough may be noted in disorders of the stomach, colon, appendix and gall bladder.

Crohn⁴ states that there are two elements in the appreciation of pain by the patient. The first is the actual physical factor, the variations in the reception of the midbrain to the afferent ascending pain stimuli. This factor apparently varies in all individuals. The second is the psychic element, which steps up or diminishes, as the case may be, the expression and enunciation of the physical pain. According to Crohn, there must be a reason why hemorrhage and perforation so often occur as the primary symptoms in ulcer. It seemed logical to believe that the patient's low degree of pain sensitiveness explains the absence of previous symptoms of ulcer. He has made a study of pain sensitiveness in ulcer of the stomach, and his statistics show that among

controls in the normal population 11.5 per cent are insensitive to pain. Ulcer is more likely to affect persons insensitive to pain (32.3 per cent). Hemorrhage occurs still more frequently in this type of patient; at least 40.8 per cent of all hemorrhage patients are either subsensitive or practically insensitive to pain. This figure runs to 61 per cent when perforation is considered and rises still higher to 72.7 per cent in cases of ulcer complicated by pyloric stenosis. Crohn believes that the degree of sensitiveness to pain affects and modifies the course of the ulcer patient. In one who is sensitive to pain, who therefore diets carefully, observes precautions and constantly remembers the distress he has suffered, the course of the ulcer is likely to be more benign. The patient who is insensitive to pain is in great part unconscious of the existence of his ulcer.

The following case is presented to exemplify a case of peptic ulcer in a hyposensitive patient:

History (H.R.)—The patient aged thirty-nine stated that he had suffered from indigestion for over ten years. This indigestion consisted of heartburn with occasional regurgitation of sour material, and an uncomfortable feeling of fulness with gas in the abdomen. These symptoms were not definitely related to the taking of food. Occasionally there was vomiting. These attacks of indigestion would continue for several days, and perhaps not recur for two to three months. At first, anti-acid powders and milk helped in controlling the symptoms, but for the past two years it appeared that they had lost their efficacy. He claimed that he had never experienced any pain with these symptoms. His appetite was good, and there was no loss of weight. He had never been disabled from continuing his duties as manager in a sales office. The patient complained of constipation and bleeding piles for several years. No history of diarrhea, jaundice, hematemesis or tarry stools. He admitted that these complaints had never troubled him greatly, and he was only seeking medical consultation to exclude the possibility of organic disease of the stomach.

Past History—Negative. Ordinary childhood diseases. No other symptoms referable to any system.

Physical Examination—Eyes—Pupils were round, regular, equal, and reacted to light and accommodation. The fundi appeared normal. Ears—Both drums were normal. Hearing intact. Nose—Negative. Mouth—Mucous membranes are well colored. Teeth are in good condition. Pharynx—negative. The tonsils are present and show no evidence of infection. Lymphatic System—Negative. Chest—The chest moved freely on respiration. Percussion note is resonant throughout. Tactile and vocal fremitus equal. Breathing vesicular. No rales are heard. Cardio-Vascular System—Blood pressure 122/80. The pulse was 72 per minute, and was regular in rate and rhythm. Moderate volume and tension. Artery wall not palpable. The heart was not enlarged to percussion. Heart sounds were regular in rate and rhythm and of good quality. No murmurs. Abdomen—The abdomen moved freely on respiration. No tenderness or rigidity noted. No masses were palpable. Liver and spleen not felt. Rectal and Proctoscopic Examination showed evidence of bleeding internal hemorrhoids. Genito-Urinary System—Negative. Urine Examination—Negative. Blood examination showed a Hg. of 75 per cent. Stool examination was negative for occult blood. Nervous System—Reflexes normal. Sensation not impaired. Muscular tonus was normal. Fluoroscopic Examination of Chest—Lungs appeared normal. The heart was normal in size and configuration. Sensitivity Tests to Pain revealed evidence

of hyposensitivity. Libman test—Patient evidenced no pain on styloid pressure, and stated that he felt no pain. Hollander Test—When the blood pressure cuff was inflated to a reading of over 260 mm. on the manometer, the patient experienced no distress and did not wince. Gastro-Intestinal Series—This examination showed evidence of prepyloric spasm under the fluoroscope. The roentgen plates definitely indicated the presence of a small pocket on the lesser curvature of the prepyloric area of the stomach with marked spasm. The six and twenty-four hour examinations revealed that the stomach had emptied within the normal limits of time and there was noted no abnormality of the intestines. Diagnosis—Peptic Ulcer. (Prepyloric). Follow-Up—This patient was placed on a Sippy diet with colloidal gel aluminum therapy. (Amphojel). He was observed for over two years, and had gained fifteen pounds in weight, and was free of symptoms.

SUMMARY

1. A case of hyposensitivity to pain occurring in peptic ulcer is reported.
2. This patient had the substitution symptoms instead of pain, which were characterized by heart burn, eructation, regurgitation of sour material, gas, and uncomfortable fulness in the abdomen.
3. In view of the absence of acute suffering under circumstances in which normally sensitive or hypersensitive individuals would complain bitterly, this patient did not seek medical aid for ten years.
4. Because of the factor of absence of pain, these hyposensitive ulcer patients are more prone to develop hemorrhage and perforation than sensitive or normally sensitive ulcer patients.
5. In routine physical examinations, it is important to determine the patient's sensitivity to pain which will greatly assist in evaluating the symptoms to formulate a correct diagnosis; for the symptoms may be principally substitutional in nature.
6. Sensitivity tests to pain are described.
7. Hyposensitivity is discussed briefly.

BIBLIOGRAPHY

1. Libman, E.: Observations on Individual Sensitiveness to Pain, J.A.M.A., 102:335, 1934.
2. Eusterman, G. B., and Balfour, D. C.: The Stomach and Duodenum. Philadelphia, W. B. Saunders Company, 1936.
3. Hollander, E.: A Clinical Gauge for Sensitivity to Pain, J. Lab. and Clin. Med., 24:537, 1939.
4. Crohn, B. B.: Abstract of Discussion on Libman's Paper, J.A.M.A., 102:350, 1934.

Dr. A. T. Bazin, Montreal, will speak on "Cancer of the Large Bowel."

Dr. F. H. Mackay, Clinical Professor of Neurology, McGill University, will give a paper on "Some of the common lesions involving the Spinal Cord."

Mr. Frank Rowe, Chairman of the Workmen's Compensation Board, will give an address at the luncheon to be held on Wednesday, July 8th.

*The Present Need for the Study of the History of Medicine

SIR ST. CLAIR THOMPSON

A GOOD story, anent the neglect of the study of the History of Medicine, is told by Harvey Cushing. At an annual meeting of the American Medical Association he, and E. C. Streeter, requisitioned a stall and made an exhibit of books and incunabula associated with Vesalius, the Father of modern anatomy and, one might almost say, the Messiah of the renaissance of medicine. It was alongside of the other stalls exhibiting surgical instruments, baby foods, drugs, and so forth. Over it was written, in large letters, "Vesalian Exhibit." It was on view some time before a solitary doctor arrived, laden with his collections from other stalls. He only stopped long enough to inquire: "Say, are there any samples given away?" "Samples of what," he was asked. "Why, of what you've got here—Vaseline, of course."

The present time seems opportune for considering the present need for urging the importance of the study of the History of Medicine. All are agreed that probably there has been no previous period in the history of the world when such a rapid and general re-valuation is being made of many ideas and factors in civilization which, for centuries, had been looked on as immutable. There are few of them which have not been thrown on an unstable market. Even the most gilt-edged have depreciated and some suspicious ventures are being inflated, often by outside brokers, in the expectation that they may reach a steady quotation and be recognized as taking the place of old-established, but, at present, discredited securities.

We must confess that it is difficult in early life purposely to turn our gaze backwards to study the route travelled by mankind and to recognize what Castiglioni calls "*la strada maestra del nostro lungo cammino*"—the main road of our long journey. The child, so soon a youth, the youth a man, is much more eager to run the race his fathers ran, with all "the rapture of the forward view." Personally, although I do not entirely accept the dictum of Mr. Ford of Detroit, that "all history is bunk," I confess that, until I arrived at what we like to call "the years that bring the philosophic mind," my historical rambles rather tended to depress me by making me notice how mankind so often went wrong in almost every possible direction before finding the high road—the *strada maestra*—and how reluctant he was even then to walk therein. I had almost reached the dead wall of the satirist who came to the conclusion that there is nothing new except what had been forgotten, and that one should let the dead past bury its dead.

We are reminded by Sudhoff¹ that last century the study of the History of Medicine was a declining art. It appears that more than 100 years ago the subject was being taught in all the medical schools of Germany. In France

*Reprinted from *Proceedings of the Royal Society of Medicine*, October 4, 1933.

1. Sudhoff, Karl, *Bull. Johns Hopkins Hosp.*, xxvi, 1930, p. 101.

we have the evidence of the interest taken in the older medical classics by the issue of Littre's bilingual edition of Hippocrates in ten volumes. This began to be published in 1839, less than 100 years ago.

Then came the rapid development of scientific medicine. We have only to think of the work of Pasteur and Lister, and to recollect that, after centuries of guesswork we gained, in the short space of the last twenty years of last century, a fair knowledge of the precise cause of Gonorrhoea (1879), Malaria (1880), Pneumonia (1880), Typhoid (1880), Glanders (1882), Tuberculosis (1882), Cholera (1883), Diphtheria (1883), Malta Fever (1887), Plague (1894), Yellow Fever (1899), Hydrophobia and other diseases. To this phenomenal advance of scientific medicine and, partly, to a natural reaction from the centuries of speculation, may be attributed the neglect which overtook the study of the History of Medicine. Sudhoff reports that one chair after another in Germany died out.

With this rapid evolution of scientific medicine, with the wonderful powers placed in our hands by Anaesthesia and Listerism, it is no wonder that the strong wine of rapid progress went to the heads of the many who do not remind themselves of the inevitability of gradualness. Sir William Hamilton said of the physicians of the Georgian period that they had tried to make medicine a science and had failed, so they made it a trade and had succeeded. We, for whom medicine has become so largely scientific in the present time, must see to it that we do not neglect the art of its practice. There is little fear of its becoming tainted with trade if we urge the need of the history of medicine and learn from it the Hippocratic tradition of a liberal profession.

The study of the History of Medicine was possibly overdone by physicians even up to the beginning of the nineteenth century. Though neither Aristotle nor Hippocrates had ever opened a human body¹ knowledge was sought for chiefly in the Greek, Arabian and Roman authorities. Still, these classical studies gave the Georgian physicians a culture, an imagination and an idealism while they were slowly absorbing the scientific spirit of the Vesalian renaissance. Besides, if these physicians, according to Sir William Hamilton's jeer, had failed to make medicine a science, their culture appears to have given them as individuals a consideration which their too scientific successors of to-day sometimes seem to have lost.

None of us, no profession, no art, no school of thought, no calling, no craft—just as no teacher and no politician—can escape the influence of the *Zeitgeist*. These epochal discoveries have led to the glorification of the scientific side of our calling and the elevation of research. Research came to mean little beyond laboratory research. With this came the exaggeration of the physically demonstrable; the counting of cells, the gazing at test tubes, the peering down microscopes, the inspection of plucked-out fragments of the sick man's anatomy. The student ceased to lay a friendly hand on his patient's arm to feel his physical fitness, or to make use of such old-fashioned investigations as the pulse, the tongue, the skin, or even the thermometer. Inquiries into his circumstances, habits, antecedents, personal and family history, were slighted, although a membership of this Section would have reminded him that:—

1. Cumston, Charles Green, *Med. Journal and Record*, N. Y., cxxii, 1925, Nov. 18, p. 615.

There is a history in all men's lives,
Figuring the nature of the times deceas'd;
The which observ'd, a man may prophesy,
With a near aim, of the main chance of things
As yet not come to life.

The young physician is apt to be too intent on more mechanized and objective interests, taking blood-pressures, making blood-counts, testing sputum and, inevitably, having X-ray examinations. As is so many other walks in life, nowadays, he is inclined to become the slave of the machine. The technique of the mechanics of our science has left little time to study the art of medicine. We have become statistically stereotyped, with card-filing minds. Colleagues no longer bring me a suffering fellow creature to help; they bring me a dossier, with a robot in tow.

In his urge to be scientific the practitioner is liable to forget that "l'amour de la médecine fait le savant; l'amour du malade fait le médecin." Had he studied the History of Medicine the physician of to-day would not be so apt to be swept by the current of mechanical developments from the sure foundation of one of the oldest arts in the world.

This astounding development in the science of medicine in the last 100 years is, of course, only a cause for rejoicing and thankfulness. I have elsewhere expressed the opinion that surgery, which, of course, is included in medicine, has made more progress in that time than in all the ages since Hippocrates. It is only the exaggeration of its application, and the neglect of the art of medicine, that I am deploring. As happens in the zig-zag evolution of this unintelligible world a reaction is already setting in. The modern scientific equipment, by itself, has failed to pluck out the heart of this mystery of life, disease, and death. Human ways, just like Nature as a whole, now threaten to over-do the tendency in a reaction from the objective to the subjective. Without first urging a wide and deep study of psychology, and a larger view of biology, we are threatened with a half-baked appreciation of both of them within our own ranks and, outside of them, by a monstrous regiment of faith healers.

In urging the value of the History of Medicine to regain the *strada maestro del nostro lungo cammino*, the highway of our long pilgrimage, let us consider what the study of our subject may do for us.

The History of Medicine, like that of mankind, is made up of advance and regression, of success and its reverse. We can learn from both. The individual organism cannot be studied without a knowledge of the evolution of every part and organ, even of every cell. A similar study is necessary in regard to medicine, not only as concerning the individual but also the mass, and with full consideration of race, country, climate, creed, conditions and the contributions made available from other arts and sciences. So, as our learned Secretary, Cawadias, has reminded me, the history of medicine is more than history, it is medicine itself. It is the most perfect method of approach to the scientific problems of the day because, as in all sciences, the fundamental principles can be studied only through the historical approach.

In conclusion, let me try to summarize, for the sake of convenience in our discussion, what the study of the History of Medicine may help us to do in present-day conditions:—

- (1) To learn to think historically. To become "historically minded" as we have become "banana minded."
- (2) To absorb, unconsciously, from its proud records, a high standard of ethics.
- (3) To respect the antiquity of our calling. The only other sciences to compare in age with it are mathematics and astronomy. In its early days medicine had much to do with both of them. Physics and chemistry, which have been revolutionizing the world in the last 100 years are children compared with medicine, to which they have contributed so much.
- (4) To inspire us with a love of our profession, a regard for its dignity and an appreciation of its difficulties.
- (5) To respect tradition. This legacy from the past may be false, or temporarily true, or everlastingly true. Every item of what we call progress will strengthen tradition, if it can be assimilated: otherwise it will fade out; or it may help to the undoing of falsely founded tradition.
- (6) To imbue us with moderation in esteeming the value of our work, and of ourselves. As Allen Pusey says: "in the first flush of opulence and success there is no state of mind so difficult to maintain, or so necessary for future success, as humility."¹ It may help our humility to recall at times that we have medical records dating back to 2500 B.C.; that assafoetida, henbane, myrrh and camomile were in use before the Christian era; that the laryngologists then made up their lozenges with liquorice, even as I do to-day; and that the comforting poultice has soothed many a Babylonian whitlow, although as Mr. C. J. S. Thompson reminds me, we have abandoned the custom of ordering the patient to eat it after application! For at least 3,000 years man has unloaded his colon with castor oil and aloes, has been helped to cough up his catarrh with squills, has balanced his acidity with bicarbonate of soda and has eased his pains with opium.
- (7) To realize the changing character of medical theories. This, while we keep our respect for tradition, will fortify our independence of judgment towards new opinions and hypotheses.
- (8) To increase our self-confidence and to lose the inferiority complex which, owing to the poverty of scientific medicine in former days, was apt to be concealed by formalism and pedantry.
- (9) To value the study of our subject even as a hobby, although not forgetting that, as Sir Henry Wellcome reminds us, a museum of medical history should be formed, "not simply to bring together a lot of curios for amusement," but to make it useful to students and to all those engaged in research. It also stimulates us to be interested in the men, the methods, the times and the circumstances by which medicine has been evolved.
- (10) To stimulate our general culture by reviving a closer kinship with literature, art, music, poetry, and the adornments of life. The physician of the present scientific day need not become merely a medicine man.

1. W. Allen Pusey. "The Importance of Being Historically Minded," *Proc. Institute of Med. of Chicago*, vol. 7, 1928, Jan. 15, No. 1, p. 1.

- (11) To show how knowledge tends to get overlaid with opinions and to emphasize the need, from time to time, of getting rid of what is commonly known as 'junk.'
- (12) To learn the art of guiding men. Knowing that we cannot suppress their prejudices and passions—a superhuman task—we must learn to restrain them, to encourage them, and persuade them, for their own health and happiness as well as for the general welfare, to submit themselves to the control of reason—as far as it is possible.
- (13) In conclusion, to show that we have more need to-day than at any previous period of the world's history to agree with Andrew Lang that "the little present must not be allowed wholly to elbow the great past out of view."

I look forward, with great delight, to sharing in the work of this Section, to investigating the records of our great past, and to tracing and helping to keep clear the main path of its progress—la strada maestra del nostro lungo cammino.

The Golf Tournament will be held as usual. Bring along your clubs and enjoy yourself on Wednesday afternoon.

There will be a reception at the Royal Cape Breton Yacht Club at 6.30 on Wednesday evening followed by the annual dinner at the Y.M.C.A.

Judge Neil McArthur will give an address at the annual dinner.

Surgeon Lieutenant Commander J. W. Macleod, R.C.N.V.R., will give a paper on "The use of the Miller-Abbott tube in cases of peritoneal infection and for intestinal obstruction."

Bring your families with you. A special committee has been formed to look after the entertainment of the ladies and children.

Dr. R. E. Powell, Lecturer in Urology, McGill University, will give a paper on "Pathology of the Lower Genito-Urinary Tract."

The President and the Secretary of the Canadian Medical Association will address the members of our Society at the first business session on Wednesday morning.

Fractures of the Forearm*

Some Technical Procedures

ARTHUR L. MURPHY, M.D., F.A.C.S.
Halifax, Nova Scotia

REDUCTION, retention, and restoration of function are the basic principles of fracture therapy. The techniques developed from these broad themes are legion. In their little details lies ultimate success or failure. Perhaps in no other branch of surgery do trifles loom as great. Our methods of dealing with two common forearm fractures do not infringe on basic principles: they have helped with trifles.

In the ubiquitous Colles' fracture, the great postreduction problem is circulatory obstruction. Originally I splinted these fractures with circular plaster, attempting to make the cast thin enough that, when split on the ulnar side, it would yield to the swelling wrist. Good in theory, the figure of eight windings around wrist and hand made an unavoidably rigid plaster. Forcing its cut edges apart was difficult and sometimes resulted in a loss of the reduction. The simple dorsal or ventral plaster mold did not give the desired stability. Hence, the spiral mold.

The mold (Figs. 1, 2, 3) is made of one to two 3 inch by 3 yard bandages. The crinoline-impregnated type is most satisfactory, giving greater strength per ounce. The mold is rolled dry; the distal end is cut obliquely to make a narrow strip across the palm. It is dipped in water, and applied without padding—this is essential. Beginning on the palm, embracing the hypothenar eminence, its distal edge follows the proximal crease of the palm till it passes between thumb and index finger. The angulated edge (made by cutting the end of the mold) is radial, and ends just distal to the radial styloid, so that the full width of the plaster covers the site of the fracture. The mold is continued around the arm to end just distal to the medial epicondyle of the humerus.

The mold is held in place by a wet gauze bandage, the palmar strip being shaped well to fit the palmar arch.

In most cases swelling of the hand will be so slight as to demand no interference. The patient may be sent home without fear of an ischemia developing over night. If swelling does become troublesome it must be relieved. The gauze bandage is cut along the lateral border of the hypothenar eminence, the plaster and injured wrist are supported firmly on their dorsum, the palmar strip of plaster is levered free from its hypothenar end, and then re-strapped less tightly. The fracture area has not been disturbed.

After 10 to 14 days the spiral mold is replaced by a simple dorsal mold with the hand in dorsiflexion.

It may be observed in Figures 2 and 3 that the hand is not in the position of flexion too often shown as the correct one for holding a Colles' fracture in reduction. Originally described by Cotton, the technique of reduction has grown to a beautiful example of surgical mechanics. The first movement is pronation. Through the leverage of the hand and carpal ligaments this forces the distal, radial fragment downward, ventrally. The second movement of ulnar deviation, by traction on the radial-carpal ligaments, opens the space into which it descends; it also corrects the lateral displacement. The third movement, flexion, in this position is limited to about 25 degrees. It simply locks the distal fragment in place and helps to correct the dorsal tilt of its articulating surface.

The spiral mold was devised originally to overcome a problem met in treating fractures of the phalanges and metacarpals, particularly Bennett's fracture at the

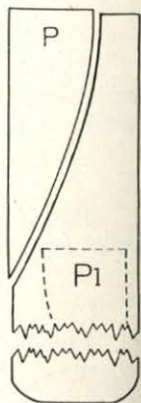


Fig. 1. Fragment P serves to reinforce the mold over the wrist joint at P1.

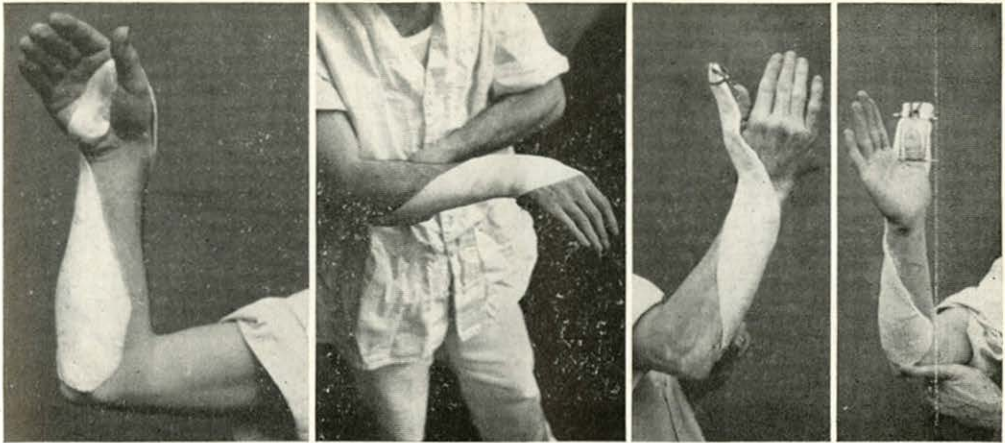


Fig. 2

Fig. 3

Fig. 4

Fig. 5

Figs. 2, 3, 4, 5 are posed by internes, as the mold when applied to a fractured arm must be bandaged on. Obviously, the Kirschner wire in Figure 5 does not pierce the phalanx.

base of the first metacarpal. Abduction of the thumb rarely gives a satisfactory reduction without traction. In using a wire, projecting from a plaster arm cuff, to take the traction through an elastic band to the Kirschner wire in the proximal phalanx, we found that the cuff (pushed tight by countertraction) often caused circulatory obstruction in the arm. The spiral mold (Figs. 4 and 5), bandaged with wet gauze, grips without squeezing. The extension along the dorsum of the thumb splints as well as giving a base for traction.

Absence of padding under these molds is essential. It permits the myriad hairs of arm and hand to serve as anchors. I have given up, in all plaster work, the use of sheet wadding. When padding is necessary, over bony points, and on plaster margins, saddler's felt or sponge rubber serves best. If no padding be needed, none is used. A smoothly molded plaster is kinder to the skin than the undulating vagaries of sheet wadding.

The apparatus for reducing fractures of the radius and ulna is presented with distinct reservations. These fractures of both bones may be divided, therapeutically, into two broad groups: those which respond to closed manipulation and those which do not. It is desirable that the first group be as large as possible. The use of good local, or deep general anesthesia, manipulation under the fluoroscope, prolonged traction to tire spastic forearm muscles—these will increase its numbers. A certain proportion of cases must fall into the operative class.

In between are those that respond to skeletal traction. Let us add to their number a group of cases we have all met—the old, ill treated, ununited fractures of radius and ulna, in which powerful flexor muscles have contracted and overcome the extensors to produce marked angulation at the site of the fracture—an angulation that must be corrected before good operative work can be done. It was in such cases that our turnbuckle apparatus (Fig. 6) was first used. We have since used it in selected, fresh fractures, with good results.



Fig. 6. The patient holds the arm, unsupported, in abduction. The apparatus is not heavy.

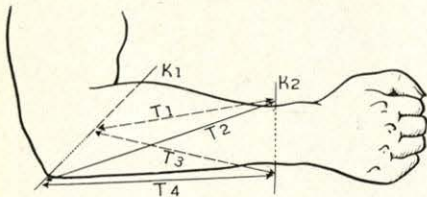


Fig. 7. K_1 , Kirschner wire through the proximal end of the ulna, at right angles to K_2 , through the distal ends of radius and ulna. T_1 , T_2 , T_3 , T_4 , turnbuckles.

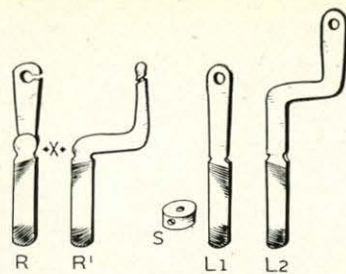


Fig. 8. R , R_1 — $2\frac{1}{2}$ inch right hand threaded end for turnbuckles. $4\frac{1}{2}$ inch and $6\frac{1}{2}$ inch pieces are identical, but lengthened at X . L_1 , Left hand threaded ends for turnbuckles T_3 and T_4 . L_2 , Left hand threaded ends for turnbuckles T_1 and T_2 . S , Stop, with setscrew, for Kirschner wire.

Kirschner wires are used according to the common technique. One is drilled through the proximal end of the ulna; one through the distal ends of radius and ulna. These wires are at right angles to one another when the hand is midway between pronation and supination. (This is not only the position of optimum function, it is the position of best muscular balance and the one in which radius and ulna are most nearly parallel.)

On the Kirschner wires are mounted four turnbuckles (Fig. 7, T_1 , T_2 , T_3 , T_4). Thus they form four triangles of force, two with their bases on the radius-ulna wire, two with their bases on the olecranon wire. Manipulation of the fractured bones is possible in all planes. They are held stable in any position without further splinting.

The apparatus and its application in detail: Four $3\frac{1}{2}$ inch turnbuckles are used. These have a range between contraction and expansion, of $2\frac{1}{2}$ inches. Three sets of right hand threaded ends are made for each turnbuckle— $2\frac{1}{2}$ inch, $4\frac{1}{2}$ inch $6\frac{1}{2}$ inch (Fig. 8), giving for the set a continuous range from 5 to $11\frac{1}{2}$ inches, to fit children and adults. Channels are cut to the Kirschner wire openings in the right hand threaded ends to permit changing sizes, without opening the stirrup. This is rarely necessary. The right hand threaded ends are offset three-quarters of an inch to allow for the curve of the arm. On two of the turnbuckles, for T_1 and T_2 , Figure 7, the left hand threaded ends are also offset $\frac{3}{4}$ inch, and are $\frac{3}{4}$ inch longer, to compensate for the added length of their diagonal direction. Four stops with set screws are provided to prevent the Kirschner wires from slipping in the bone if unequal stress be put on them.

The Kirschner wires are drilled through distal radius and ulna, and through the proximal ulna. Sterile, saddler's felt "washers" are mounted on each side of each wire, against the skin. The stops are set on the wires. The turnbuckles follow; the wires are drawn taut in stirrups. The proximal stirrup can be slung to the posterior surface of the upper arm by adhesive. The distal rests best on the dorsum of the forearm. The turnbuckles are now adjusted to reduce the fracture. Obviously, to correct bony angulation, lengthening of one turnbuckle will necessitate simultaneous lengthening of one other, and shortening of the remaining two. Thus, if there be an ulnar convexity, lengthening of T_1 and T_2 must be accompanied by shortening of T_3 and T_4 . Uniform traction is applied by making equal stress on all four. As with any form of screw traction, the danger of over extension must be guarded against. Fluoroscopic control of manipulations is desirable.

With a satisfactory reduction confirmed by X-ray examination, arm and apparatus may be supported in an ordinary sling. When the patient is in bed the arm should be supported on the chest by pads; otherwise there is danger of pressure on the medial stop on the olecranon wire, pushing it against the skin. The patient is allowed active movements of wrist and elbow (the latter is limited to 25 degrees). These movements are painless and seem to cause no abnormal mobility at the fracture line. Despite this apparently complete immobilization, I have not depended on

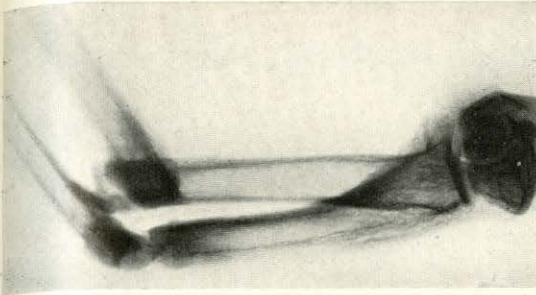


Fig. 9. Case 2, December 18, 1940

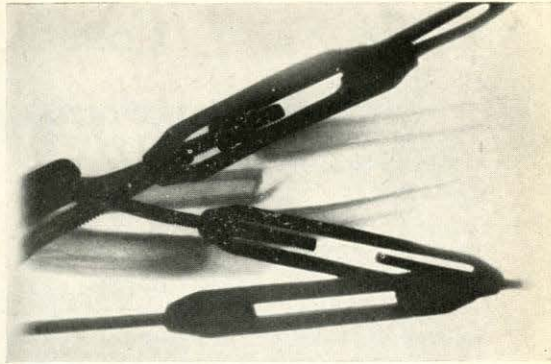


Fig. 10. Case 2, February 5, 1941

the apparatus alone for splinting beyond the first two weeks. Perhaps this is an unnecessary precaution. I do not yet know. At the end of that time, turnbuckles are removed and plaster applied from the insertion of the deltoid to the proximal crease of the palm, incorporating the wires.

If desired, plaster may be applied immediately following reduction. In this event it is better to use the large Kirschner stirrups, to facilitate the application of the plaster beneath the turnbuckles.

Three cases in which the use of the turnbuckles was particularly indicated:

CASE 1 (Victoria General Hospital, No. 26294, Fig. 6). The patient, aged 43 years, was admitted with a fracture of radius and ulna in the middle third. Both fractures were oblique. The radius showed very slight displacement; the ulnar fragments were overriding with angulation. The elbow joint was the seat of an osteoarthritis. To lessen the immobilization time of the elbow, reduction was made with the turnbuckle apparatus and movements of elbow and wrist were permitted, for 2 weeks. X-ray examination at this time showed early callus formation. A plaster was then applied from deltoid insertion to the proximal crease of the palm, incorporating the wires. The turnbuckle apparatus was removed.

CASE 2 (Victoria General Hospital, No. 264463). The patient, male, aged 26 years, was admitted with a fracture of the radius and ulna, at the upper and middle third, of a year's standing; union was fibrous. Flexor contraction had resulted in 70 degrees' angulation at the site of the fracture (Fig. 9). Manual traction and massage were given without result. December 19, 1940, the turnbuckle apparatus was applied. Adjustments were made to stretch the contracted muscles, the turnbuckles being given a few turns every 2 or 3 days. February 5, 1941, the angulation was almost completely corrected (Fig. 10). The arm was prepared for operation to freshen the bone ends and fix them internally. After operation the apparatus was reapplied to prevent recurrence of contraction.

CASE 3 (Halifax Infirmary, No. 1250-39). The patient, male, aged 52 years, had an ununited fracture of the radius and ulna at their middle thirds. There was 15 degrees of ulnar convexity at the site. Operation was performed. The bones appeared healthy; the ends were freshened, perforated with multiple drill holes, and wired. The bones were held straight with little effort. Incisions were closed and a plaster cast was applied over light dressings. X-ray films taken at the end of 3 weeks showed good callus formation, but a return of the angulation, although the cast had not been disturbed. The cast was removed. Kirschner wires and the turnbuckle apparatus were applied, the angulation was corrected and so held till firm bony union.

SUMMARY

Presented as useful adjuncts to fracture therapy are:

1. A spiral plaster mold for fractures of the lower end of the radius, the metacarpals and phalanges, which grips and immobilizes the part without causing circulatory interference.

2. An apparatus for reduction of fractures of radius and ulna which consists of four special turnbuckles mounted on Kirschner wires through distal radius and ulna, and through proximal ulna, so as to give control of the fragments in all planes.

Correspondence

INTERIM REPORT GERALD BURNS MEMORIAL FUND

To the Editors, BULLETIN

Dear Sirs:

It seemed to our committee that it might be now worth while advertising in your columns what start has been made in distributing the funds collected under the Fund named above.

Our ladies' Committee, under Mrs. Harry O'Brien, has been sending packages to every member of the profession overseas from this province. These packages have varied in their contents. One month there would be cigarettes and chocolate, and another month tinned foodstuffs, such as milk, fish, meat, chicken, and other such things that our colleagues overseas were short of.

In addition we have sent to No. 7 General Hospital and the 22nd Field Ambulance subscriptions to two medical journals each, subscriptions to about six Canadian and American magazines each, and a subscription to the Book of the Month Club each.

What we have done, in effect, was to see that each Nova Scotian doctor overseas got a regular monthly parcel put up as outlined above, and that in addition certain reading matter was sent to the two units containing the largest single aggregation of our colleagues.

We have had letters from Lt. Col. E. F. Ross of the 22nd Field Ambulance and from Majors H. D. O'Brien and C. M. Bethune of the 7th General Hospital. The last is enclosed herewith for publication, together with this report.

Yours truly

H. B. ATLEE, *Chairman*

Gerald Burns Memorial Fund Committee

NO. 7 CANADIAN GENERAL HOSPITAL, R.C.A.M.C. CANADIAN ARMY IN ENGLAND

April 7, 1942

Doctor H. B. Atlee

The Victoria General Hospital, Halifax, Nova Scotia

Dear Doctor Atlee:

Please convey the thanks of all our officers to the "Gerald Burns Memorial Fund" administrators, for the parcels and periodicals we have been receiving.

Everything is most welcome, and is appreciated by all to the fullest. It is not only the material comfort that cheers us, but the knowledge of the thoughtfulness behind these gifts, and the realization that a great deal of time and effort is involved in every parcel.

We have a very fine hospital, with exceptionally comfortable quarters and messes. At the moment, we are not filled to capacity, but there always seems to be plenty to do and to occupy all our time.

All the officers and nursing sisters are well, and enjoying the English springtime. Please give our very best regards to all our friends. We think of them many, many times a day.

With kindest personal regards

Yours sincerely

(C. M. BETHUNE) Major, R.C.A.M.C.

Registrar: For Officer Commanding

No. 7 Canadian General Hospital, R.C.A.M.C.

Personal Interest Notes

THIRTEEN student nurses received their diplomas at the graduation exercises of the Children's Hospital School of Nursing, Halifax, on May 29th. Mr. E. J. Murphy, Vice-president of the Hospital Board of Directors presided, Mrs. E. J. Murphy presented the diplomas, Miss Marjorie Jenkins, R.N., Superintendent, presented the pins, and Dr. J. C. Acker presented the general proficiency prize. The address to the graduates was given by Rev. Harvey L. Denton.

Dr. A. R. Morton, Commissioner of Health for Halifax, recently gave an address before the Canadian Public Health Association in Toronto. Dr. Morton spoke on the health conditions in Halifax relating to the war.

Dr. A. M. Wilson of Barrington suffered a broken knee cap of the right leg and multiple body bruises in a car collision recently. Dr. Wilson was on a call and was driving between Clyde River and Port Clyde when he had a head-on collision with a car from Liverpool. His condition is described by the doctors of the Yarmouth Hospital as "fairly good".

Dr. S. G. MacKenzie of Truro, accompanied by his son, Dr. S. G. MacKenzie, who is on the staff of the Ottawa Civic Hospital, Ottawa, recently enjoyed a fishing trip to Guysboro County.

Dr. Arthur W. Ormiston of Sydney who graduated from Dalhousie Medical School in May has been appointed part-time Medical Health Officer for Sydney. He will work in conjunction with Dr. C. J. W. Beekwith, Divisional Medical Officer, who has been retained in an advisory capacity.

Dr. G. D. Donaldson of Mahone Bay, who joined the R.C.A.F. recently spent a short visit with his family before he proceeded to Toronto.

Dr. Robert H. MacLeod, has given up his practice in Upper Stewiacke, and has purchased a house on Quinpool Road, Halifax, where he will practise in the future.

Dr. and Mrs. Sidney R. Bennett of Toronto are visiting at the home of Rev. and Mrs. Sidney Bennett in Lunenburg.

Dr. W. D. Piercey, graduate of Dalhousie, has been appointed Superintendent of the Ottawa Civic Hospital. Dr. Piercey is a son of Mr. and Mrs. W. D. Piercey of Halifax. He received his B.Sc., degree from Dalhousie in 1930, and his M.D., C.M. in 1934. Following graduation he joined the staff of the Ottawa Civic Hospital as junior house surgeon and later served as senior house surgeon. He then went to London, England, for post-graduate study, and was appointed Superintendent of the Bristol Eye Hospital. Whilst occupying this post he was offered the position of Assistant Superintendent of the Ottawa Civic Hospital, and recently has been promoted to Superintendent.

Eighty-Ninth Annual Meeting of the Medical Society of Nova Scotia

SYDNEY, N. S.

JULY 8th and 9th, 1942

PROGRAMME

TUESDAY, JULY 7th.

2.30 p.m. Executive Meeting, "Isle Royale" Hotel.

WEDNESDAY, JULY 8th.

9.00 a.m. Registration, Y.M.C.A.

9.30 a.m. Official Welcome by the Mayor of Sydney.

9.45 a.m. "Cancer of the Large Bowel."

DR. A. T. BAZIN, Montreal.

10.15 a.m. "Some of the Common Lesions involving the Spinal Cord."

DR. F. H. MACKAY, Professor Neurology, McGill University,
Montreal.

10.45 a.m. First Business Session.

12.30 p.m. Addresses by the President and Secretary of the Canadian
Medical Association.

1.15 p.m. Adjournment.

1.30 p.m. Luncheon, Isle Royale Hotel, with Address by MR. FRANK ROWE,
Chairman of the Workmen's Compensation Board.

2.30 p.m. Annual Golf Tournament and other forms of entertainment
to be arranged by local committee for those not playing golf.

6.30 p.m. Reception at the Royal Cape Breton Yacht Club.

7.00 p.m. Annual Dinner, Y.M.C.A.

Presidential Address.

Address by JUDGE NEIL McARTHUR.

THURSDAY, JULY 9th.

9.00 a.m. Second Business Session.

10.00 a.m. "Quinidine."

DR. K. A. MACKENZIE, Halifax.

10.30 a.m. "The Use of the Miller-Abbott Tube in Cases of Peritoneal
Infection and for Intestinal Obstruction."

SURGEON LIEUTENANT COMMANDER J. W. MACLEOD,
R.C.N.V.R.

11.00 a.m. "Pathology of the Lower Genito-Urinary Tract."

DR. R. E. POWELL, Lecturer in Urology, McGill University,
Montreal.

11.30 a.m. "Shock Therapy in the Depressions of Later Life."

DR. R. O. JONES, Halifax.

12.00 Noon "Peritoneal Conditions."

DR. ERIC W. MACDONALD, Reserve Mines.

12.30 p.m. "Relationship between the Department of Health and the
General Practitioner."

DR. C. J. W. BECKWITH, Sydney.