

## Original Articles.

### ABDOMINAL SURGERY: NOTES AND OBSERVATIONS ON THE OPERATIVE WORK OF THE MIRAJ HOSPITAL FOR THE YEAR, 1915, INCLUDING SOME MORE RECENT CASES.\*

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THERE were 347 abdominal operations performed in the Miraj Hospital in 1915 excluding hernias. The following notes and observations pertain only to those included under "Abdominal," 212 cases in all, from which certain series are selected for comments. The 135 abdominal operations upon the uterus and appendages will be reserved for a future communication.

Before referring to the different groups of abdominal lesions for which surgical relief was undertaken, I should like to refer to the preparation of the skin for these operations. In the course of the past year we have had a number of wound infections, some 15 in all, which occurred at varying intervals and which were most common during the hot season. These infections were of a low grade non-virulent type and in no case resulted seriously though detaining patients in the hospital beyond the usual period. In most of these cases there was little or no post-operative rise of temperature, and in a few they amounted to stitch abscesses only. Six cases required resuture of the wound which was done after the development of healthy granulation, with complete healing of the resutured wound. In seeking for the cause of these infections it was found in one group of deep suppuration to be due to the use of bazar gauze (our European supply having run short) which had not been boiled, but supply sterilized in the autoclave after washing. Such gauze in its original state is not a good absorbent, and resists steam impregnation, and usually comes from establishments potentially septic. Sterilization by boiling previously to steam pressure eliminated the trouble. Later on other infections occurring, dressings, towels, clothing were tested by cultural methods and found sterile.

During the period of these infections iodine in strength from 2 to 6 per cent. was used to disinfect the skin after the patient was put on the table and simply preceded by a bath and clean clothing the day previously.

It was further observed that in the wounds of European patients and Indians of the better classes accustomed to habits of cleanliness such

infections seldom occurred. I might add that rubber gloves were usually worn by both surgeon and assistants and only dressings sterilized for an hour in a high pressure sterilizer were employed. All ligature and sutures employed were sterilized by heat in one form or other and the sterility of which had repeatedly been tested. Without discussing further the details of our investigations as to the causes of our trouble we have arrived at the conclusion that in Indian patients of the lower and the middle classes, who comprise the majority of our operative cases, iodine as a skin disinfectant, applied immediately before operation on the table on a dry skin and allowed to dry before making incision, *is not* a sufficient precaution against wound infection. Since adopting the following methods in the preparation of the same class of patients we have succeeded in eliminating infections which previously by process of exclusion and deduction appeared to be due to skin contamination. The preparation is as follows:—

(1) Bath, and soap and water cleansing on the day previous to operation.

(2) Scrubbing with ether followed by bichloride of mercury, 1 in 1,000, or carbolic, 1 in 100, and finally applying a moist sterile dressing of normal salt solution which is allowed to dry on the patient.

(3) Application of 6 per cent. tincture of iodine on removal of the preparatory dressing at the time of operation, the iodine being given time to dry before making the incision.

(4) Protection of the skin to the edge of the incision by sterile towels held by clips.

(5) In emergency cases cleansing skin on the table with turpentine, sponging with ether, and applying iodine as above.

(6) All towels and linen to be boiled after washing preparatory to steam sterilization.

A further theoretical precaution against infection when practicable, but which we do not consider essential though often employed, is the use of subcuticular sutures or the passing of all interrupted sutures from within outward through the skin.

We have had opportunity to confirm observations made by others in the formations of intestinal adhesions as the result of iodine on the skin contacting with abdominal viscera, to prevent which the skin at the site of the incision should be cleansed of iodine by the application of alcohol before making the incision, and the protecting of exposed viscera by the use of towels or gauze pads clipped to the edges of the skin wound.

*Operations on the Stomach. Gastroenterostomy for Gastric and Duodenal Ulcer.*—Beginning with the year 1901 in which our first gastroenterostomy was performed there were to the end of 1915 three hundred and sixty-nine gastroenterostomies

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performed in the Miraj Hospital, 415 up to date of writing (September 30th); 48 of these were performed during the year 1915 with three deaths, one from pneumonia on the second day, another from sudden heart failure on the third day, and the third with mitral disease who came out of the anæsthetic after five hours with violent delirium, and signs of cerebral mischief followed by collapse. Post-operative pneumonia is a complication which Indian patients, in our experience, bear badly, and has been the chief factor in the mortality of this operation. Proximity to the diaphragm, the principal respiratory muscle or "chest piston" which is reflexly restricted in its action by the adjacent operative wounds together with the possibility of infective organisms being carried directly from the visceral wounds to the lungs through the contiguous blood-stream, are the evident predominating elements in pulmonary complications following the operation. The season of the year is another factor to be considered. We seldom see post-operative pneumonia in the hot weather. Special care is taken to prevent it during the monsoon and cold seasons. Warm cotton-lined jackets, the Fowler position, and uniform warmth in a separate room are the means chiefly employed. The hypodermic use of quinine when the temperature rises above  $101^{\circ}$ , we believe, has preventive value.

At the Medical Congress in Bombay in 1909 we called attention to the fact that during the preceding year no operation for gastric ulcer had been performed in any of the large Presidency Hospitals of Bombay, Madras, Calcutta, and Lahore. We also drew attention to the prevalence of this disease in India reporting up to that time 70 operations for chronic gastric and duodenal ulcer. It is gratifying to note that since the year of the Congress an increasing number of operations for these conditions have been successfully performed in different parts of India, indicating that many cases previously regarded as dyspepsia, gastritis, etc., are now, as the result of the study of living pathology in operative work, readily recognized clinically. It has continued to be our experience that the majority of patients with gastric and duodenal ulcer come from districts where jwari and bazri bread with raw chillies and hot curries are extensively used as the principal articles of diet. Comparatively few of our patients have come from districts where rice is the principal ration.

There is hardly any operative procedure that has given us more general satisfaction than gastroenterostomy for the relief of these conditions. The more pronounced the lesion either in the pylorus or duodenum the more striking has been the relief afforded.

Judging from recent literature the advocates of excision of gastric ulcers, more especially indurated ulcers occupying the pyloric end of

the stomach, seem to be increasing in number. The main argument in favour of excision, with or without gastroenterostomy, is the statement that 70 per cent. of all gastric cancers originate in chronic ulcer. We are not yet convinced of the wisdom of excising all such ulcers here in India for the reason mainly that few patients who seek operative relief come to operation in a fit condition for the more radical operation of excision. Excision is attended by a higher mortality than gastroenterostomy even in the hands of expert surgeons of Europe and America, where patients are obviously better operative risks than those we meet with in India. We still feel that, with few exceptions, we are doing the best for our patients in adhering to the older procedure, even though the end results may not be so eminently satisfactory from a surgical point of view. The majority of our patients with gastric ulcer are advanced cases, and excision in them would usually mean a partial gasterectomy or at least a pylorotomy with a gastroenterostomy added, and the result a consequent higher primary mortality. We have occasionally proposed excision as a secondary operation in suitable cases, but unfortunately for us the patients are so much relieved by the primary gastroenterostomy that few are willing to accept our proposal for a second operation.

Another serious handicap in this as in all important surgical work in India is the difficulty of following and keeping in touch with operated patients. It is next to impossible, therefore, to determine the end results of our work. The illiterate population from which most of our patients come do not appreciate our desire for information regarding their further progress. We, therefore, have to be satisfied with what seems to be best for our patients at the time leaving the future to care for itself. This may be only second-best, but it is the best we can expect in the present state of lay knowledge in this country. These remarks regarding excision have reference to gastric ulcer only, inasmuch as duodenal ulcer seldom, if ever, become cancerous, and in this condition gastroenterostomy is an eminently satisfactory procedure. Furthermore, duodenal ulcer seldom admit of excision while with gastroenterostomy a cure can be confidently expected in the vast majority of such cases. We are now trying off the pylorus in an increasing number of cases of duodenal ulcer and observing results.

During the past few years our attention has frequently been directed to cases simulating duodenal ulcer but in which no visible ulcer was recognized at operation, and in seeking for the cause of the gastric disturbance we have frequently found it in the appendix or the terminal ileum. Sir Arbuthnot Lane was one of the first surgeons to direct attention to the

reflex effect of disease in this region upon the duodenum and pylorus. Others have since contributed to our better appreciation of the symptom complex of the so-called appendicular dyspepsia or the syndrome of chronic obliterating and subacute appendicitis. Recent studies demonstrating the selective action of streptococcus and other micro-organisms have shed much light on the previous obscure ætiology of these disorders.

*Duodenal and Gastric Ulcer with Diseased Appendix.*—In the 48 operations for gastric and duodenal ulcer performed in Miraj in 1915 there were seven cases in which the appendix was removed at the same time and in which the history and direct inspection of the appendix indicated previous attack of appendicitis. In five of these cases the ulcer was in the duodenum; in one a previous gastroenterostomy had been done for duodenal ulcer, and some months later, a frank attack of appendicitis having occurred, the abdomen was re-opened and the diseased appendix was removed and the pylorus ligated, the patient having had subsequent to his gastroenterostomy several attacks of bilious vomiting previous to the attack of appendicitis. There has been no further trouble in this case since this operation about eight months ago, the patient, a student, meanwhile being under close observation. Of the two remaining cases one was a case of achilia gastrica entirely relieved by the removal of the appendix; the other case in which the appendix was also diseased was a case of gastric ulcer. Two patients gave a history resembling duodenal ulcer, but in which no ulcer or adjacent pathology to account for the symptoms beyond the presence of a hypertrophic pyloric muscle was found. In both of these patients the appendix being abnormal was removed, and in both pyloroplasty was done at the same time with satisfactory operative result. The removal of the appendix alone, in view of more recent experience, might have sufficed in these two patients. A case in point is one operated only a few days ago. The patient had suffered for many years from "dyspepsia;" during the past four years his gastric distress had been growing steadily worse. His history was that of a duodenal ulcer, excepting that there was no history of vomiting or passing of blood and there was no occult blood in his stools. Hæmatemesis and melæna are so frequently absent from the history of these cases that the importance of these signs is relatively of little value. The suffering of this patient was evident from the fact that he had greatly restricted his diet in order to control the pain. He came demanding an operation, having been treated without relief for several years. On opening the abdomen a perfectly normal stomach and duodenum were found, and in a thorough examination of the abdominal

viscera the only pathology discovered was a chronic obliterating appendicitis, removal of which gave relief. I shall refer to this subject again in speaking of appendicitis.

In a recent article by Foss, entitled "Error in Abdominal Diagnosis," he refers to 31 abdominal cases in which an error of diagnosis was made in the Mayo Clinic at Rochester Minn. In five of these in which a clinical diagnosis of duodenal ulcer was made the operative diagnosis was chronic appendicitis. Dr. Foss in this article says:—"The extraordinary similarity in symptomatology often existing between chronic appendicitis and duodenal ulcer is a subject sufficiently threadbare to be omitted, were it not for the fact that the point is being constantly overlooked and is a potent factor in rendering abdominal diagnosis anything but an exact science. Not uncommonly does a patient present a history of hunger pain relieved by eating or the taking of alkalies and recurring with definite periodicity with nothing to account for the syndrome but a chronic catarrhal appendicitis. And to strengthen the diagnosis of duodenal ulcer the gastro-enterologist may report a marked hyperacidity, and the roentgenologist hyperperistalsis or other suggestive signs; and when the operation is performed the duodenum is found normal, and the removal of a chronically inflamed appendix cures the patient. I have records of several such patients in whom a 90 per cent. diagnosis of duodenal ulcer was made on a clear, uninvolved, so-called text-book history, who were completely relieved by the removal of their appendices. One patient gained eighteen pounds in the first sixty days following his operation."

*Doubtful Ulcers.*—The writer can recall several cases in former years where an indurated mass in the pylorus, thought to be carcinoma, was found at operation, and with symptoms simulating cancer and in which gastroenterostomy alone was done. These patients were relieved of their symptoms and gained in weight steadily after operation. A patient operated by my colleague Dr. Vail during the past year is instructive in this connection. The patient operated in April had a moveable mass in the pyloric end of the stomach and thought to be cancer. A gastroenterostomy was done with a partial gastrectomy in view of a later date. Three weeks later on opening the abdomen scarcely a trace of the "growth" was found and the need of further operation thus negated. These experiences present an argument in favour of two-stage operation for gastric cancer, especially in cases in which the new growth is at operation still small and moveable and a diagnosis of cancer doubtful.

*Intestinal Tuberculosis.*—Whether abdominal tuberculosis is relatively on the increase in India is difficult to state with precision. With the very apparent increase of pulmonary tuberculosis

it would not be surprising to find a corresponding increase on the incidence of other forms of tuberculosis. Our personal experience at Miraj favours the belief that there has been a considerable increase in abdominal tuberculosis in this part of India in recent years. The following is the operative incidence of abdominal tuberculosis in the Miraj Hospital during the years 1913 to 1915 inclusive :—

1913.—Total abdominal operations 184, tubercular peritonitis 5, tubercular infiltration of bowel and mesentery 5.

1914.—Total abdominal operations 281, tubercular peritonitis 6, tubercular infiltration of bowel and mesentery 15.

1915.—Total abdominal operations 347, tubercular peritonitis 3, tubercular infiltration of bowel and mesentery 15.

Thus in 812 abdominal operations performed in the Miraj Hospital during this period of three years, there were 49 cases of abdominal tuberculosis or approximately 6 per cent. Thirty-five of the 49 cases were bowel infiltrations or roughly  $2\frac{1}{2}$  times as many of bowel cases than peritoneal. Of course those figures are too small from which to draw general conclusions as to the incidence of abdominal tuberculosis in India; still they serve at least to confirm our own impressions regarding the increase of tuberculosis in India in general and serves to emphasise the importance of abdominal tuberculosis from a surgical point of view.

The disease was confined mainly to the cæcum or the contiguous part of the ascending colon, later involving the terminal ileum and thence proximally where one or more annular infiltrations may be found in the ileum varying from a few inches to a foot or more apart. The cæcum is usually mobile in the earlier stages, but later on becomes more or less fixed by infiltration of the mesentery and involvement of the adjacent mesenteric glands. We have occasionally found the disease primary in the ileum, but this has been comparatively rare, and the longer standing the disease in the ileum the more likely the presence of isolated areas of infiltration in the small bowel. So that in operation one should always examine proximally the small bowel for some distance. When vomiting or other symptoms of high stricture are present such examination is increasingly important. Indeed the whole small bowel should be rapidly passed between the fingers in order to be quite sure that no further areas exist higher up. We have seen as many as six such annular infiltrations in four or five feet of terminal ileum and occasionally isolated areas at a much higher level in the bowel. Another observation made is the confinement of the disease to the bowel in the majority of cases when it is primary there and hence amenable to surgical relief.

*Diagnosis.*—Unfortunately many of these patients suffer for a considerable time before the real condition is recognized or not infrequently it is mistaken for chronic appendicitis. A patient now in the hospital and recently operated from North India consulted a number of prominent physicians and several surgeons in North India. He brought with him several written opinions of the physicians, none of whom apparently suspected tubercle inasmuch as no growth could be felt, the symptoms suggesting rather ill-defined disease of the colon and upper abdomen. Exploration revealed the presence of a considerable tubercular mass in the cæcum, not palpable previously. The Von Pirquet test is of considerable value in making a diagnosis in suspected cases, especially when positive. A negative reaction however is of less value since we have not infrequently found quite extensive abdominal tuberculosis when the Von Pirquet test gave a negative reaction. Failing health, the presence of chronic and steadily increasing abdominal pain located in the lower right quadrant of the abdomen and accompanied off and on by colic, and the presence of gurgling or "gas ball" should make one suspicious of tubercle. In thin subjects a tumour is usually felt and is generally moveable and painful on pressure, while rigidity, a feature of appendicitis, is in most cases absent. Constipation is the rule, and reflex pyloric syndrome occasionally obtains.

The predilection of the disease for the cæcum is an interesting phenomenon, the reason for this fact is not readily explained.

Is a chronic appendicitis a precursor of the disease? We hardly think so, since in a number of quite early cases we have observed the appendix was apparently quite normal. The appendix is of course involved in the later stage of the disease by continuity, but in early cases the infiltration appears most commonly on the anterior wall of the cæcum over the ileocæcal junction. The abundance of intestinal flora in the cæcal pouch may be, and probably is, a predisposing factor in rendering this bowel area more susceptible of invasion by the tubercle bacillus. The practice of Indians of pressing the thigh against the abdomen and over the cæcal region in the act of defecation may be a causative factor, as such pressure may add insult to injury in a viscera already prolific with bacteria and overloaded with fæces. A further causative factor may be found in the lymphatic supply of the part. The predilection of cancer for this section of the large bowel is analogous.

*Treatment.*—Given a case with these signs operation should be recommended, and if the diagnosis is confirmed by exploration a two-stage operation performed, if no contra-indication exists. Formerly we removed the disease at one operation, but for the past two years our

results of operation have greatly improved most by making anastomosis and at a later stage by excising the diseased bowel. One objection, not a surgical objection however, to the two-stage operation in this country is the unwillingness of many patients to submit to a second operation even though urgently advised. The relief experienced from the anastomosis is usually so marked that the patient feels he has been cured, or so greatly relieved he is loth to undergo the ordeal of a second operation within a short time. This ignorance on the part of many of our patients has not been easy to combat. Hence in the majority of our patients the second-stage of our two-stage operation does not come off. This is not always an unmixed evil. In two cases which we recall, the disease found at the second stage operation had so far disappeared as to make resection inadvisable. Of course these were early cases and the original infiltration inextensive.

Of the fifteen cases subjected to operations in the past year, twelve were cases in which disease was primary in the ileum and confined to that structure, the adjacent colon, or the terminal ileum, one in the ascending colon and two in the jejunum.

Lateral anastomosis was done in thirteen cases involving the cæcum and colon. Three of these patients (advanced cases) died, and ten made operative recoveries. One died from good extension of the disease four months after the primary operation, the patient's condition at no time permitting resection; one, a very late case, died of shock; and the third of post-operative pneumonia.

In the two jejunal cases the involved bowel was immediately excised and lateral anastomosis performed with satisfactory recovery.

Post-operatively, all of these patients were given tuberculin vaccine B E in graded weekly doses in addition to tonics and were detained in the hospital as long as possible in order to continue treatment, impossible in most cases in their homes, and with gratifying results so far as we know. However, it has not been possible in most cases to follow the majority of these patients in order to determine end results.

*Appendicitis.*—The appendix was removed in 82 cases during the year, 75 of these were in the service of the writer. There was one death in the series, which was not due to the appendix operation *per se*, but occurred in a patient suffering from tuberculous visceral peritonitis in which there was a focus in the appendix; tuberculous meningitis developed from which the patient died. Of the 82 cases only five were operated on during the acute stages and two of these had abscesses. Eighteen cases are recorded as subacute with interval operations. Of the remaining fifty-nine, 12 are recorded as chronic, and in 47 cases the appendix was removed

while operating for other conditions in which the appendix was found abnormal.

The practice of removing the appendix, when opening the abdomen for other conditions, has been observed only when it was considered a diseased organ. The appendix was found diseased and removed in operations for the following diseases:—

| Disease.   | Principal Operation.                         | Appendix removed.                                      |
|--|--|--|
| Duodenal Ulcer ...   | Gastroenterostomy ...                        | 3 cases.   |
| Duodenal Ulcer and Ovarian Cyst.   | Gastroenterostomy, Ovariectomy.              | 1 case.  |
| Vomiting following Gastroenterostomy for duodenal ulcer.                     | Ligature of pylorus...                       | 1 case.  |
| Gastric Ulcer ...  | Gastroenterostomy ..                         | 1 case.  |
| Pylorospasia with thickened pyloric ring.                                    | Pyloroplasty ...                             | 2 cases.   |
|  |  | (Appendic-tomy alone might have relieved these cases.) |
| Chronic Dysentery ...  | Cecostomy ...                                | 1 case.  |
| Intussusception ...  | Laparotomy ...                               | 1 case.  |
| Inguinal Hernia of left side cæcum in sac, with Appendix, child 2 years.     | Hernioplasty ...                             | 1 case.  |
| Intestinal adhesions, Jackson membrane, Lane's Kink, intestinal stasis, etc. | Division or excision of bands and adhesions. | 18 cases.  |
|  | Liberation and Peritonization.               | 1 case.  |
| Gall Stones ...  | Cholecystectomy ...                          | 1 case.  |
| Ureteral Calculus ...  | Removal ...                                  | 1 case.  |
| Moveable Kidney ...  | Nephropexy ...                               | 2 cases.   |
| Tubercular Peritonitis...  | Laparotomy ...                               | 1 case.  |
| Fibroid of Uterus ...  | Hysterectomy ...                             | 3 cases.   |
| Ovarian Cyst ...   | Ovariectomy ...                              | 1 case.  |
| Oophoritis and Parametritis.   | Hysterectomy ...                             | 1 case.  |
| Retroversion, Cystic Ovaries, Sulpingitis.                                   | Gilliam suspension, Oophorectomy, etc.       | 13 cases.  |
| Enteroptosis ...   | Laparotomy ...                               | 2 cases.   |
| Scrotal Tumour, with symptoms of Appendicitis.                               | Orchidectomy ...                             | 1 case.  |
| Sterility ...  | Curettagé ...                                | 1 case.  |

Some of these cases deserve comment.

*Intussusception.*—In this case a very large inflamed appendix was telescoped with the ileum into the colon and was removed after reduction of the intussusception. Appendicitis in this case was considered a possible factor in the production of the intussusception.

*Hernia.*—The case was one of large left-sided congenital scrotal hernia in a child 2 years of age. The contents of the sac consisted of cæcum and ascending colon with a very large and inflamed appendix. The appendix was removed in the usual manner and a hernioplasty performed, the little patient making a satisfactory recovery. The case is an illustration of delayed rotation of the colon.

*Uretral Calculus.*—In this case the skiagram showed a stone in the ureter at the pelvic brim on the left side. The abdomen was opened and the stone located and removed by opening the posterior peritoneum. The wound in the ureter was closed and a retro-peritoneal drain inserted by tunnelling and bringing the drain out through a stab in the coin. The appendix was

also found to be diseased and removed at the same time, the patient making a good recovery.

*Jackson Membrane, Lane's Kink, Treve's, Bands, Adhesions, etc.*—There were eighteen such cases, in all of which the appendix was removed. These patients were admitted for the relief of persistent pain in the right lower quadrant of the abdomen and diagnosed as chronic appendicitis. The majority of these patients suffered from constipation and gas accumulation, and many of them complained of dull pain and annoying gas disturbance in the right side of the abdomen. It has been our practice in all cases of chronic appendicitis to open the abdomen by the Kammerer incision along the outer border of the right rectus muscle which permits of exploration of the upper abdomen and pelvis, the entire hand being introduced for the purpose. The Jackson veil if present is not disturbed except in cases where bands run across the cæcum or colon restricting action of the bowel. During the two years preceding 1915 we had some thirty cases in which a Jackson membrane in varying form were encountered. In all of them the practice of dividing the membrane and more or less peritonealizing the raw surface produced by divisions of these bands and veils was carried out. While some of the patients were benefited, especially those in which restricting bands developed in the membrane were divided, we have since discontinued the practice believing that the membrane is in most cases of congenital origin and within limits serves a useful purpose in supporting a descending and overloaded colon. The appendix in many of these cases is found to be badly drained owing to the restricting action of bands developed over the caput colic and not unfrequently enclosing the appendix or its proximal portion causing stasis and toxic absorption. The liberation and removal of the appendix with removal of a Lane's and dividing other bands when present has given more satisfactory results than the more extensive and, what we now deem, the unnecessary surgery as formerly practised.

*Pelvic Disorders.*—In a total of 135 operations on the pelvic organs the appendix was examined and found abnormal in 18 cases, and removed at the same time with comparative ease in all cases through the midline incision, a moderate extension upward of the incision occasionally being required. The removal of the appendix in patients whose condition at the completion of the principal operation was good enough to warrant its removal has not increased our mortality in these operations since all such cases recovered.

*Gall Stones.*—There were three cases operated during the year in which cholecystostomy was done in two with cystic gall bladders and one cholecystostomy. In the latter case the appendix

was diseased and removed, all recovering. The gall bladder and ducts have been systematically examined in all operations in the upper abdomen, and as a rule in chronic appendix cases and frequently in pelvic operations where the incision employed permitted such examination. The relatively small number of gall bladder cases observed by us is indicative of the comparative infrequency of gall stone disease in India. I should add that enteric fever—a frequent factor in the causation of gall bladder disease—is not common in the Southern Maratha Country.

*Chronic Dysentery.*—The use of emetine has largely eliminated the operation of appendicostomy or cecostomy, fairly popular a few years back. In one case in which emetine and other medications failed the appendix was removed and a cecostomy done with satisfactory result so long as irrigation was kept up (some two months) but later relapsed.

In concluding this already lengthy paper I would like to refer briefly to two or three other abdominal disorders.

*Huge Abdominal Abscess.*—The tolerance of the abdomen to the pressure of large quantities of pus is illustrated in two cases with almost identical histories.

One was a female Hindu 30 years of age and the other a male Hindu boy 18 years of age. The history of the former was mainly as follows:—Three months prior to admission she suddenly developed pain in the right ileac fossa, accompanied by fever. After eight days a small swelling in the right lower quadrant of the abdomen was formed which gradually extended until the whole abdomen became enlarged. On admission the patient was suffering from low fever, and a well marked leucocytosis. The distended abdomen resembled a case of ascites, plus considerable pain and general tenderness. Percussion was dull all over and did not change on changing the position of the patient. There was no œdema of the abdominal wall or extremities. The bowels moved regularly and the stools were normal. The appetite was poor and food taken caused a sense of fulness, but there was no nausea or vomiting. There was moderate emaciation and well marked secondary anaemia.

A tentative diagnosis of tubercular peritonitis was made. The abdomen was opened by a midline incision below the umbilicus and 6 pints of creamy inodorous pus evacuated. The incision was enlarged to 3½' in length and all the pus evacuated and wiped out. On inspection of the abscess cavity it was found that abdominal viscera were nowhere visible. From the stomach, liver, and spleen above to the brim of the pelvis and pubes below a distinct wall had formed completely excluding all the abdominal and pelvic viscera which lay above in the upper abdomen, posteriorly in the mid abdomen and beneath in the pelvis converting the abdomen cavity into two chambers. A large rubber drain was inserted upwards and the abdominal incision closed up to the drain and the end of the drain inserted into a bottle. Pus varying from 5 to 10 ounces was drained off daily for a period of three weeks when the tube was gradually shortened, the sinus finally closing encouraged by injections of bismuth paste.

The case of the boy was practically identical except that the pus was held under much higher tension and squirted for eight feet across the operating room. The

origin of the pus in both the cases was believed to result from a perforated appendix.

In the case of the woman sterilized pus injections daily and weekly injections of auto-vaccine seemed to hasten recovery.

The writer recalls a case in which the abdomen was opened for the relief of obstipation. A cavity similar to the cases related above was discovered but containing only a little clear fluid, a thick unyielding membrane had completely walled off the abdominal and pelvic viscera in precisely the same manner as observed in the above-mentioned cases. This case was of long standing and from the history and operation it was presumed that pus previously present had been absorbed.

*Intestinal obstruction from impacted worms.*—Intestinal obstruction due to worms has been met with on several occasions in our clinic. A case of this kind was encountered in April last. The patient was a child, was admitted with a history and symptoms resembling intussusception, except that there had been no previous diarrhoea or bloody stools. On opening the abdomen a loop of ileum shaped like the letter U and distended to  $2\frac{1}{2}$ " in diameter was firmly impacted with round worms. One hundred and twenty worms were extracted through an incision in the bowel and the incision closed without attempting to remove more worms which were felt in other portions of the bowel. The operation was completed within thirty minutes. The little patient, however, died of shock. Santonin and cathartics had been used in this case and which had probably induced impaction since a good many of the worms were dead. The case is interesting as showing the presence of so large a number of worms in a child of two years and the inadvisability of using cathartics in cases of intestinal obstruction.

*Intussusception.*—There were six cases in the year. This is an unusual number for a hospital of the size of the Miraj Hospital. The youngest was one year and the oldest between 60 and 70 years of age, and both died from shock of the incident to necessary manipulation of the bowel. The lesson suggested in these two cases is the pre- and post-operative use of opium in these extremes of age in full dosage but which was not for some reason used in both these cases. The bowel should be handled as little as possible without undue exposure and with gentleness in manipulation.

### CÆSARIAN SECTION FOR DYSTOCIA DUE TO OSTEOMALACIA.

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CÆSARIAN section, although comparatively easy, must always be regarded as one of the most important operations of surgery. For, in many cases, two lives are saved by one operation.

This article is based upon 47 operations which have been performed in the Kashmir Mission Hospital during the past six years.

In Kashmir, although rickets is extremely rare, osteomalacia on the contrary is comparatively common. It is usually confined to multiparous women, and the symptoms first appear soon after labour. I have, however, met with one case of a primipara in whom the first signs of the disease came on during pregnancy. Hindu women appear to be more liable to it than Mahomedans. In Kashmir, Hindu women form less than 10 per cent. of the female population. But of 21 cases of osteomalacia upon which I operated in 1916, six were Hindus. It is possible that purely vegetarian diet may predispose.

It would seem probable that the disease is due to some form of systemic infection.

The deformity is characteristic. It can be well demonstrated with the X-rays. The patient should lie on her face with the vacuum tube below. The acuteness of the sub-pubic arch is then clearly shown. The pubic rami may be almost parallel.

*External pelvimetry* gives most interesting results. The following table shows the remarkable diminution in the size of the pelvis. The approximation of the great trochanters and iliac crests is particularly noteworthy:—

TABLE OF PELVIMETRY IN TEN CASES OF OSTEOMALACIA, KASHMIR MISSION HOSPITAL.

| Measurement between     | OSTEOMALACIA. |                | Normal average pelvis for comparison. |
|-------------------------|---------------|----------------|---------------------------------------|
|                         | Average.      | Lowest record. |                                       |
|                         | cm.           | cm             | cm.                                   |
| Ant. sup. spines ...    | 21            | 18             | 26                                    |
| Iliac crests ...        | 22.6          | 19             | 29                                    |
| Heads of trochanters... | 25            | 23             | 33                                    |
| Ext. conjugate ...      | 17            | 16             | 21                                    |

The pelvis evidently simply collapses in the direction of combined weight and pressure. Often it will not admit the hand, a condition which seriously affects the question of craniotomy.

In time past there has been very little hope for these cases. The terrible condition of midwifery practice in Kashmir condemns many, even perfectly normal, labour cases to death from puerperal sepsis. With complications, the mortality becomes appalling. In many cases unskilled force produces dreadful traumatism.

Fortunately, Western medical science with its anatomical knowledge and attention to antiseptic and manipulative technique is yearly vindicating its position, and our hospitals are attracting increasing numbers of such cases. The pity of it is, that owing to the late period at which most of