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SUCCESSFUL REMOVAL
OF AN
Enormous Mesenteric Tumour
AND NEARLY
EIGHT FEET OF INTESTINE.

BY
FRANCIS J. SHEPHERD, M.D., C. M.,
Professor of Anatomy and Lecturer on Operative Surgery in McGill University,
Surgeon to the Montreal General Hospital.

The successful cases of removal of large sections of intestine are
by no means uncommon; in 1881 Koeberlé, of Strassburg, removed
six and a half feet successfully, and this amount has not been often
exceeded since that time. When in addition to intestine a large
tumour also has to be removed, the condition becomes more compli-
cated, and the number of cases of resection of a large extent of gut
with a tumour are not very numerous. My case is as follows:

C. S., aged 28, a healthy looking young man, with a florid complexion,
was sent to me January 18th, by Dr. H. A. Lafleur, for opinion as to
advisability of operation. On examination, the patient's abdomen appeared
very prominent, and on palpating it was seen that a smooth hard tumour
filled the whole abdomen from the ensiform cartilage to the pubes. It was
quite movable, and its upper edge immediately below the ribs could be felt
sharp and hard. Over the anterior part of the abdomen percussion was dull,
but in the flanks a resonant note was easily elicited. One got the impres-
sion from examination that the tumour was a solid one. Patient did not
complain of pain, and said he had never had any; he had never been ill. A
year ago noticed that his dress clothes, which he only occasionally wore,
seemed too small for him, and he thought it was because he was growing
stout. Three or four months ago remarked that his abdomen was swollen,
and on feeling it noticed a tumour which was quite moveable. The tumour
had gradually grown to its present size. Bowels have always been most
regular; urine has always been normal. On consultation, operation was
advised. The tumour was thought to be probably a retroperitoneal lipoma
on account of its size, smoothness, and gradual growth. Dr. Armstrong,
who saw the case with me and assisted at the operation, agreed as to neces-
sity of operation.

\textbf{Operation, January 18th, 1897.}—The patient having been etherised,
an incision was made into the abdominal cavity above the umbilicus and
the tumour was immediately reached. It had a bluish look, seemed elastic,
and apparently free from adhesions. The incision was enlarged upwards,
and on introducing my hand I found a perfectly smooth tumour unattached
above and, as far as I could reach, on the flanks, but having many adhesions
below and in front.

The tumour filled the whole cavity of the abdomen, and the sides over-
lapped so much that it could not be explored postero-laterally or posteriorly.
Removal was thought feasible, so the incision was extended for some dis-
tance below the umbilicus. There were firm adhesions both over the
anterior and lateral surfaces of the growth. After separating these rapidly,
with some haemorrhage, the tumour was quickly delivered from the abdomen,
and then it became plain that it grew from the mesentery, and had some
three feet of small intestine closely adherent to it on its lower and posterior
aspect. Above, the tumour was closely attached to the transverse colon.
Beneath the colic attachment a great number of large mesenteric vessels
entered it. It was now seen that at least 3 feet of intestine would have to
be removed, and perhaps more, owing to ligature of mesenteric vessels,
would be deprived of nutrition, and removal would be necessary. There was
nothing to do but to go on with the operation, for certainly the tumour could
not be returned. The tumour seemed so intimately blended with its cover-
ing of mesentery that owing to excessive haemorrhage, which resulted from
the attempt, enucleation had to be abandoned. First, the transverse colon
was separated from the upper end of the tumour to which it was attached
by fibrous tissue; then the mesenteric vessels were ligatured one by one, as
close to the tumour as possible, and the mesentery cut as tied. After some
time and the tying of numberless ligatures, the tumour was freed, the intest-
tines involved in its lower part cut away, and the mass with the 3 feet of
ileum lifted out of the abdomen. Previously to cutting away the bowel which
was attached to the tumour, rubber tubing was tied around it. Now, after
removing the tumour, two ends of the bowel remained, each end having over
2 feet absolutely without any mesenteric blood supply. There was nothing
to be done but to remove these portions of bowel. The ends were
brought together in the way I usually adopt in resection, namely, a continu-
sous suture of fine silk through the mucous membrane and afterwards a
continuous Lembert suture through the peritoneum and subperitoneal tissue.
Afterwards the rent in the mesentery was closed with continuous Lembert
sutures. During the time these procedures were being carried out, the
patient had been getting very weak from loss of blood and the long con-
tinuance of the operation, so, whilst I was suturing the bowel, my assistants
introduced into the basilic vein of right arm two quarts of sterilised saline
solution, which had the effect of bringing up the pulse very satisfactorily.
In fact, without this aid, I do not believe the patient would have left the
table alive. On examining the bowel it was found that the lower end, after
the removal of the portion deprived of its blood supply, was only about six
inches from the ileo-cecal valve, and that all the portion removed was
ileum.
After swabbing out the abdomen, which now seemed to have little intestine in it, and clearing the pelvis of blood clots, some large pieces of gauze were packed about the pedicle of the tumour into the flanks and into the pelvis, and the ends brought out of the wound. The abdomen was now closed with silkworm gut sutures, and the usual dressings applied. On leaving the table the patient’s pulse was 160, and hardly perceptible at the wrist.

After a few hours in a warm bed it fell to 120. The actual operation took nearly an hour and a half, the greatest time being consumed in ligaturing and cutting away the mesentery. During the night following the operation, nutritive and stimulating enemata were given; he vomited a few times only. Next day he complained of severe pain and a sense of tightness, but was in very good condition, with a pulse of 112, temperature 99°. That night he was given ½ gr. sulphate of morphine hypodermically, and he slept well all night. Next morning he was given a large enema of soap-suds and turpentine, but it was ineffectual, and was followed by some vomiting. There was, of course, no distention, so much bowel and so large a tumour having been taken away. The gauzes were removed from the abdomen, and on the second day the wound was redressed; temperature 100°, pulse 120.

On the night of third day an enema brought away considerable flatus. Still fed by enemata, and given cracked ice and champagne by the mouth. At night he was given ½ gr. sulphate of morphine hypodermically, and slept well.

On the fourth day he vomited occasionally, and had a very dry tongue; was restless, but his pulse improved (96), and temperature reached normal.

On the fifth day beef-tea, milk and lime water were given by the mouth.

On the sixth day he first had a stool, and after this there was rather an inclination to diarrhoea. The wound was dressed for the second time on the eighth day (January 26th), and the stitches were removed. There was a stitch-hole abscess of considerable size at the lower end of the wound, which discharged pus for a few days, but there was no rise of temperature. During convalescence his temperature ranged from 98-99°, and pulse 90-100.

On February 18th he was so well that he went out for a drive, and he left the hospital on February 21st, about five weeks after the operation.

During the last two weeks of his stay in the hospital he gained flesh rapidly, his weight increasing during one week a pound a day, altogether 15 pounds.

I heard from him a month ago (July, 1897), and he writes that he feels perfectly well, and rides a bicycle and weighs 140 pounds. When he left Montreal in March he weighed 115 pounds.

After leaving the hospital he had frequent attacks of diarrhoea—indeed, seldom had a solid stool. He would swell up for a day or two, and then be relieved by a large number of liquid stools; in the interval his stools were always liquid, and he suffered from occasional attacks of colic.

After the operation we were in some doubt as to whether the patient would obtain sufficient nutrition from the intestine that was left, for after the 8 feet were taken away the amount of small intes-
tine seemed very small, being unusually short in his case; however, when he began to eat he rapidly gained weight, and has continued to do so up to the present. At the time I was consoled by reading some experiments of Senn on dogs, in which he concluded that in all cases of extensive resection of small intestines where the resected portion exceed one-half the length of this portion of the intestinal tract, where the animal survived the operation marasmus followed as a constant result, although the animals consumed large quantities of food. In all these cases defective digestion and absorption could be directly attributed to a degree of shortening of the digestive canal incompatible with normal digestion and absorption. As the small intestines usually measure from 20 to 22 feet, and as only about 8 feet had been removed, I felt there was reason for anticipating a favourable termination of the operation. Gzebicky concludes, after many experiments on animals, that a resection of 286 centimetres in man is feasible. In my case 234 were removed, and in one case, a boy, operated on by Ruggi, of Rome, 3 metres and 30 centimetres were removed; the patient recovered. This is the greatest amount of intestine that, as far as I am aware, was ever successfully resected.

The question of solid mesenteric tumours has been recently dealt with by W. L. Harris and W. Herzog, of Chicago, who report a successful case of removal of a solid mesenteric tumour (weighing 5 lbs.) and 51 centimetres of intestines from a boy aged 5 years. A table is given of 57 cases. Of these 18 were operated on, and 10 recovered from the operation. Of these 10 cases only 2 were malignant tumours, and 1 died subsequently from obstruction due to a Murphy's button. In the majority of cases nothing was done, and they all died.

Of the 57 cases death was reported in 40 cases. No data given in 7 cases. Recovered after operation, 10 cases.

Of these 57 cases 16 were carcinomata, 10 lipomata, and 7 sarcomata; the rest were fibromata and lymphomata, etc.

A minute account is given of the microscopical appearance of the tumour in the case of Drs. Harris and Herzog, which proved to be lympho-sarcoma. The case was diagnosed as one of tumour of the mesentery before operation.

In only 3 cases of these operations for tumours of the mesentery
is there any mention of removal of intestine. In case 30, Madeleng removed 20 centimetres of gut; in case 53, Canthorn removed 43 inches (about 109 centimetres); and in case 57 Harris removed 51 centimetres (20 inches).

In a paper by Dr. J. W. Elliot, of Boston, “On the Operative Relief of Gangrene of Intestine due to Occlusion of the Mesenteric Vessels,” a number of cases where more extensive resection of the gut than in his own was successfully accomplished is given. These are five in number, namely those of Kocher, Kœberlé, Schlange, and Braun; to these I can add as many more.

<table>
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<tr>
<th>No.</th>
<th>Operator</th>
<th>Amount Resected</th>
<th>For What</th>
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<tr>
<td>1</td>
<td>Ruggi</td>
<td>30</td>
<td>Stricture and inflammatory matting of intestines.</td>
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<tr>
<td>2</td>
<td>Shepherd</td>
<td>34</td>
<td>Tun o f mesentery.</td>
</tr>
<tr>
<td>3</td>
<td>Kocher</td>
<td>8</td>
<td>Railway injury.</td>
</tr>
<tr>
<td>4</td>
<td>Kocher</td>
<td>3</td>
<td>Multiple strictures.</td>
</tr>
<tr>
<td>5</td>
<td>Kocher</td>
<td>60</td>
<td>Strangulated hernia.</td>
</tr>
<tr>
<td>6</td>
<td>Braun</td>
<td>37</td>
<td>Umbilical hernia.</td>
</tr>
<tr>
<td>7</td>
<td>Schlange</td>
<td>35</td>
<td>Internal strangulation.</td>
</tr>
<tr>
<td>8</td>
<td>Elliot</td>
<td>21</td>
<td>Gangrene of intestine.</td>
</tr>
<tr>
<td>9</td>
<td>Roux</td>
<td>24</td>
<td>Lipoma of mesentery.</td>
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<tr>
<td>10</td>
<td>Canthorn</td>
<td>9</td>
<td>Sarcoma of mesentery.</td>
</tr>
<tr>
<td>11</td>
<td>Maston, G. W.</td>
<td>12</td>
<td>Sarcoma of mesentery.</td>
</tr>
<tr>
<td>12</td>
<td>Trombeta</td>
<td>10</td>
<td>Quoted by Ruggi.</td>
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<td>13</td>
<td>Hahn</td>
<td>80</td>
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In these thirteen cases the patients all recovered from the operation, and six months later eight were in good health, one died four months after from marasmus, and two from obstruction due to a Murphy’s button. In the others the loss of so large an amount of small intestine did not apparently interfere with their nutrition, except in Braun’s case (6). Diarrhoea was noticed in several cases, especially where careful dieting was not observed. Otherwise patients felt well, and most of them had continued to gain flesh; my own case during the last three months gained 25 lbs.

The following is a more detailed account of the cases tabulated above:

1. The most remarkable case is that of Ruggi. In this case 330 centimetres of small gut were removed in 1894 from a boy, aged 8, for stenosis. Three operations were performed. The first relieved the stenosis by dividing a band; obstruction continuing, 7 to 8 centi-
metres were resected. This relieved for a time, when again obstruction occurred and a third operation was performed. The obstruction this time was found to be due to matting together of coils of intestine, and in endeavouring to free them the mesentery was torn away; so a large amount of bowel had to be removed, namely, 3m. 30cm. The ends were brought together by a primary suture. The boy did well, all his digestive functions being satisfactorily performed. He gained flesh after some weeks rapidly, and was in perfect health two years after, when the article was written. This, as far as I know, is the largest piece of intestine successfully resected.

2. Shepherd 92 inches (2m. 34 cm.) of small gut measured without stretching the day after operation and reported above. In this case a solid tumour, weighing 13 lbs., was also removed. Patient well seven months afterwards and gaining flesh.

3. Kocher removed 2 m. 8 cm. for railway injury. Ends of intestine united by a primary suture. Patient remained well, with the exception of having a diarrhœa easily started by errors of diet.

4. Koeberle of Strassburg, resected 2 m. 3 cm. (6 feet 1 1/4 inches) for multiple strictures. The cut ends were stitched into the abdominal wound, which wound closed in 6 weeks, and the patient, a woman aged 22, suffered no digestive troubles after.

5. Kocher resected 160 cm. (5 feet 3 inches) for strangulated hernia in a man aged 57 by primary suture. Patient died three years later from another disease.

6. Braun removed 137 cm. (4 feet 6 inches) by immediate suture for umbilical hernia. Patient died four months later of inanition after a second operation.

7. Schlange resected 135 cm. (4 feet 5 inches) for internal strangulation in a woman aged 42. Two years later patient was in good health.

8. Elliott resected 124 cm. (4 feet 3 1/4 inch) in a man aged 25 for infarction due to thrombosis of the mesenteric veins. Patient was in good health two years after.

9. Roux of Marseilles, resected 124 cm. of intestine (4 feet 3 1/4 inch, for a lipoma with recovery.

10. Canthorn resected 43 inches (109 cm.) of small intestines from a man aged 49 for sarcoma of mesentery, ends united by
Murphy's button. Patient recovered from operation, but died four months later from obstruction brought about by the button.

11. Maston\textsuperscript{10} resected 112 cm. (44 inches) for sarcoma of mesentery, death five months later from perforation due to Murphy's button.

12. Trombetta in 1884 resected 110 centimetres (43\(\frac{1}{2}\) inches) of small intestines in a woman, aged 40 years (quoted by Ruggi).

13. Hahn resected 80 centimetres (31\(\frac{1}{2}\) inches), 1885, in a man aged 38 years (quoted by Ruggi).

The following is the pathological report of tumour in my case furnished by Dr. Wyatt Johnston, pathologist to the hospital:

Large, smooth, firm rounded growth, 11 inches by 10 inches by 5 inches. Weight 5,250 grams (13 lbs). Attached to the growth are 36 inches of small intestine. Also two other lengths of small intestine received, 30 inches and 26 inches respectively. Total length of gut removed 7 feet 8 inches (234 cm).

Growth encapsulated, firm, inelastic to touch. On section cut surface, pale grey, translucent and glistening; not very vascular; has a fasciculated appearance.

Microscopical examination shows growth to be fibromyxoma containing clear spaces, which contain a fluid becoming coagulated and granular on adding acetic acid. Stained sections show spindle and stellate cells, forming bundles and reticula. Vessels are much thickened. These growths are semi-malignant, but prognosis better than in sarcoma.

[The patient was exhibited to the Section as well as the tumour and the three lengths of intestine which had been removed. Patient was in perfect health and said now he had normal stools.]

BIBLIOGRAPHY.

5. Quoted by Elliot, loc. cit.
10. Annals of Surgery, Jan., 1895.