from the axillary or brachial artery respectively; this is superficial in the cubital fossa, where it divides into radial and ulnar branches which remain superficial, the former in the proximal third and the latter in the proximal two-thirds of the forearm.

W. W. RICHARDSON, M.B., Ch.B.,
Dunedin Hospital, Otago, New Zealand.

REFERENCES

- Cohen, Sol. M. (1948). *Lancet*, 2, 361, 409.
Dubreuil-Chambardel, L. (1926). *Variations des artères du membre supérieure*, p. 190. Masson, Paris.
McCormack, L. J., Cauldwell, E. W., and Anson, B. J. (1953). *Surg. Gynec. Obstet.*, 96, 43.
Quain, J. (1894). *Anatomy*, vol. II, part II, p. 439. London.

Ileo-colic Intussusception after Appendicectomy

Ileo-colic intussusception following appendicectomy is a rare condition. Cleland (1953) reviewed the five recorded cases, and added a sixth. In a further case, here reported, the intussusception occurred within two weeks of operation for acute appendicitis.

CASE REPORT

A lance-corporal aged 19 was admitted to hospital on January 26, 1954, with a typical history of acute appendicitis. Appendicectomy was performed through a gridiron incision; the appendix, lying in the pelvic position, was acutely inflamed throughout the whole of its extent. The stump was invaginated with a purse-string suture, and the caecum and proximal part of the ascending colon were noticed to be abnormally mobile.

Post-operative progress was satisfactory until the evening of the fourth day, when he complained of a vague central abdominal pain, which recurred several times throughout the day. On the fifth day the pains became increasingly severe, were colicky in nature, and were localized to the left iliac fossa. He had developed anorexia and had not vomited. His bowels were opened normally twice early in the day; no mucus or blood was seen, but after the second bowel action he passed no flatus up to the time of his second operation. His general condition was good, pulse 80, and temperature 99° F. (37.2° C.). He had tenderness, with guarding, over the right half of the abdomen and normal gut sounds were heard. Rectal examination elicited tenderness high up in the pelvis. Urine examination showed no abnormality; his total white-cell count was 12,000 per c.cm., with 82% polymorphonuclear leucocytes; and a straight x-ray examination of the abdomen in the standing position revealed no conclusive abnormality.

During the evening of the fifth day after operation his condition deteriorated. He began to vomit, and his pulse rate rose to 120 and his temperature to 100.2° F. (37.9° C.). The pains became less severe and less frequent. The tenderness and guarding had spread to the epigastrium and the left hypochondrium. No mass was palpable. Intestinal obstruction due to an intussusception was tentatively diagnosed and operation advised. Under anaesthesia an elongated mass lying transversely in the epigastrium could be felt.

Laparotomy was performed through a right lower paramedian incision. There was an intussusception of the terminal 9 in. (23 cm.) of the ileum and the caecum into the ascending colon and transverse colon, almost to the splenic flexure. This was fairly easily reduced except for the caecum, which had formed the apex of the intussusception. The caecum was finally reduced manually, accompanied by a few small spurts of pus from the oedematous and inflamed site of the invaginated appendix stump. The caecum and the proximal part of the ascending colon were quite mobile and had a short mesentery. The site of the appendix stump was infected, with flakes of pus covering the serosa, but the wall of the caecum appeared quite viable. The capillary oozing was controlled with hot packs; the caecum was dusted with penicillin powder and replaced in the abdomen. The wound was closed in layers and the peritoneum drained.

The patient was placed on a five-day course of intramuscular crystalline penicillin, 200,000 units six-hourly, and streptomycin, 0.5 g. twice a day. Intravenous infusion and

gastric aspiration were continued for three days. On the third day after his second operation he was well enough to take fluids by mouth and to get up. He continued to make satisfactory progress, and by the tenth day was quite fit and awaiting his sick leave.

DISCUSSION

The cases reported by Rouquette (1914), Brodersen (1930), Schaaff (1933), Roesgen (1943), Ingelrans *et al.* (1947), and Cleland (1953) were of intussusception occurring in the immediate post-operative period following appendicectomy for acute appendicitis. In all of these the site of the invaginated stump of the appendix had formed the apex of the intussusception. The reports recorded either state definitely or infer that the stump had been invaginated, and the case described here is no exception. The advisability of invaginating the stump is questionable. Since invagination is such a frequent procedure, the rarity of the intussusception seems unusual if this is the cause.

Mayo (1934) quotes his pathologist, who had found a pocket of pus at the site of the invaginated appendix stump in cases in which appendicectomy had been performed in combination with another surgical procedure and death had occurred within 21 days. It seems likely that it is the oedematous inflamed wall of the caecum, sometimes with small abscess formation, which may act as the apex of the intussusception, not the invaginated stump of the appendix.

There is, however, another factor—that of failure of the third stage of rotation of the mid-gut, with the resulting mobile caecum and ascending colon. Forshall (1953) states that a fixed caecum is unlikely to intussuscept. Aird (1949) is more definite in claiming that ileo-caecal intussusception cannot occur unless the caecum and ascending colon are mobile and provided with a mesentery. Intussusception of the vermiform appendix with subsequent ileo-colic intussusception is a much more common occurrence than ileo-colic intussusception following appendicectomy, and McSwain (1941) collected 81 published cases. He added a personal case in which the patient had an ileo-colic intussusception originating from partial intussusception of the appendix. At operation the intussusception was reduced and the appendix removed. This appendicectomy was followed by a recurrence of the ileo-colic intussusception three months after operation. The caecum and ascending colon were extremely mobile and possessed a long mesentery.

In the case presented the patient exhibited two important aetiological factors—namely, an inflamed oedematous wall of the caecum, forming a mass at the site of the invaginated appendix stump, and a mobile caecum and ascending colon with a mesentery.

It seems reasonable, therefore, to suppose that the intussusception would not have occurred unless the congenital abnormality were present together with the inflammatory mass in the caecal wall. If this were not so, ileo-colic intussusception following appendicectomy would occur much more often than it does.

It is usually considered unnecessary to perform any fixation of the intestines after reduction of an intussusception in a child. If, however, a mobile caecum with a mesentery is found at appendicectomy, ileo-colic intussusception may be prevented by attaching the caecum to the lateral abdominal wall by means of sutures.

I wish to thank Colonel A. G. D. Whyte, consultant surgeon, B.A.O.R., for his assistance and encouragement in preparing this report.

J. E. BRIDGER, M.B., B.S.,
Late Captain, R.A.M.C.

REFERENCES

- Aird, I. (1949). *Companion in Surgical Studies*. Livingstone, Edinburgh.
Brodersen, N. H. (1930). *Acta chir. scand.*, 66, 103.
Cleland, G. (1953). *Brit. J. Surg.*, 41, 108.
Forshall, I. (1953). *Ibid.*, 40, 305.
Ingelrans, P., Grout, P., and Loy, M. (1947). *Lille chir.*, 2, 110.
McSwain, B. (1941). *Sth. med. J.*, 34, 263.
Mayo, C. (1934). *Coll. Pap. Mayo Clin.*, 26, 154.
Roesgen, C. W. (1943). *Chirurg.*, 15, 463.
Rouquette, S. (1914). *Brit. J. Surg.*, 1, 722.
Schaaff, G. (1933). *Disch. Z. Chir.*, 241, 121.