

Bone in anal canal causing acute anal pain

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Introduction

BONE stuck in the anal canal causing acute anal pain is not an uncommon occurrence seen in general practice, especially among the Chinese, whose dietary habit and customary use of chopsticks in eating require the chopping up of meat and fish into small pieces together with bones, which are often fragmented pieces, easily swallowed by accident. However, so far as is known to the author, it is surprising that it has not been documented or mentioned anywhere in available literature to make it seem such a rarity. References and reports of unusual foreign bodies in the rectum have been made but not of bones in the anal canal (Mohan Lal 1975, Rains and Capper 1965).

In this paper, the author takes the opportunity to illustrate the condition by reporting 3 cases which he encountered recently in his general practice within a period of about 3 months.

Case 1.

L.P.S., a 19-year-old Chinese school boy, came with the complaint of a severe anal pain following an early morning diarrhoeal bowel motion. The pain was aggravated by walking and sitting. In fact, when the patient was invited to sit in the author's consulting room, he sat slowly and carefully down on to the edge of the chair, adopting a posture commonly seen in patients with prolapsed haemorrhoids or perianal abscess. There was no history of haemorrhoids or similar pain previously. A digital examination per rectum revealed a piece of bone (Fig. 1a), the size and shape of a match-stick and measuring about $1\frac{1}{2}$ inches long, stuck transversely across the anal canal about $\frac{1}{2}$ inch above the anal verge. It was removed by hooking the index finger around it and breaking it in the middle. On ques-

tioning, the patient admitted to have swallowed a piece of fish bone by accident the previous night.

Case 2.

W.S.O., a 45 year-old Chinese labourer, who had been to a wedding dinner the previous night, presented with an acute anal pain following defaecation and asked to be treated for piles which he thought he had. Like Case 1, the pain was aggravated by movement and he could not sit squarely on his chair. Though he had a history of piles he had been free from it for the last couple of years. His stools was loose and soft. On examination, an irregular piece of bone (Fig. 1b), about $\frac{1}{2}$ inch thick and $1\frac{1}{4}$ inches long, was felt striding across the anal canal at the level of the dentate line. Removal of the bone was achieved by stretching the anal wall sideway at one end of the bone with a finger, thus releasing it, and turning it longitudinally, it was extracted.

Case 3.

K.E.B., a 50 year-old Chinese labourer, had a history of acute onset of severe anal pain following defaecation, thought it was due to piles and self-treated himself as such. He only came on the second day, when the pain became unbearable. Walking, sitting, and even lying down was a torture. The stools had been soft and normal, and there was no history of anorectal disease. Per rectum examination showed a piece of bone (Fig. 1c), pointed at both ends, measuring about $\frac{1}{3}$ inch thick and $1\frac{1}{3}$ inches long, stuck across the lower portion of the anal canal. Removal was difficult because of pain and anal spasm. It was dislodged digitally into the rectum, picked up and removed with a pair of forceps through a protoscope.

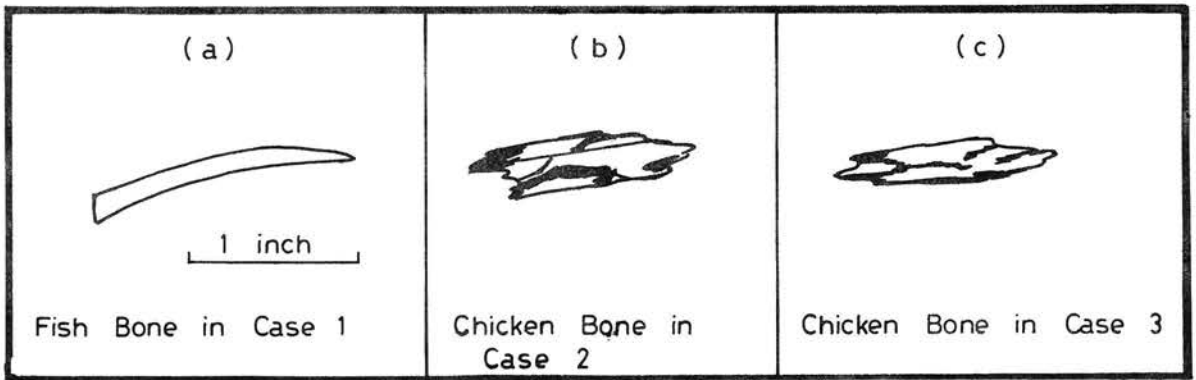


Figure 1

Discussion:

It is astonishing to realise how a piece a bone swallowed by accident could survive journeying through over 30 feet of the alimentary canal and has to get stuck at its last inch or so of its journey in the anal canal. Nevertheless, it does happen and not infrequently too, and in the author's experience, it ranks with prolapsed haemorrhoids, perianal abscess, thrombotic piles, fissure-in-ano, and acute proctitis as one of the commonest causes of acute anal pain seen in general practice, in a Chinese dominated rural community. Needless to say it must always be considered in any acute anal pain especially when the patient is a Chinese.

Usually the history is suggestive — the acuteness of the onset of the anal pain during or following defaecation, the nature of pain being aggravated by

movements, the loose, soft, or diarrhoeal stools, and the absence of previous history of anorectal diseases. In fact the author diagnosed the 3 cases from history alone, and in each case he told the patient the diagnosis before the PR examination.

A study of the anatomy and function of the anal canal will perhaps help to understand how the bone can get stuck in the anal canal.

The anal canal is the last inch or so of the alimentary canal and functions as an important gateway for the control and regulation of defaecation. It is equipped with a powerful set of sphincteric apparatus (Fig. 2) which consists of the anorectal ring, the internal anal sphincter, and the external anal sphincter.

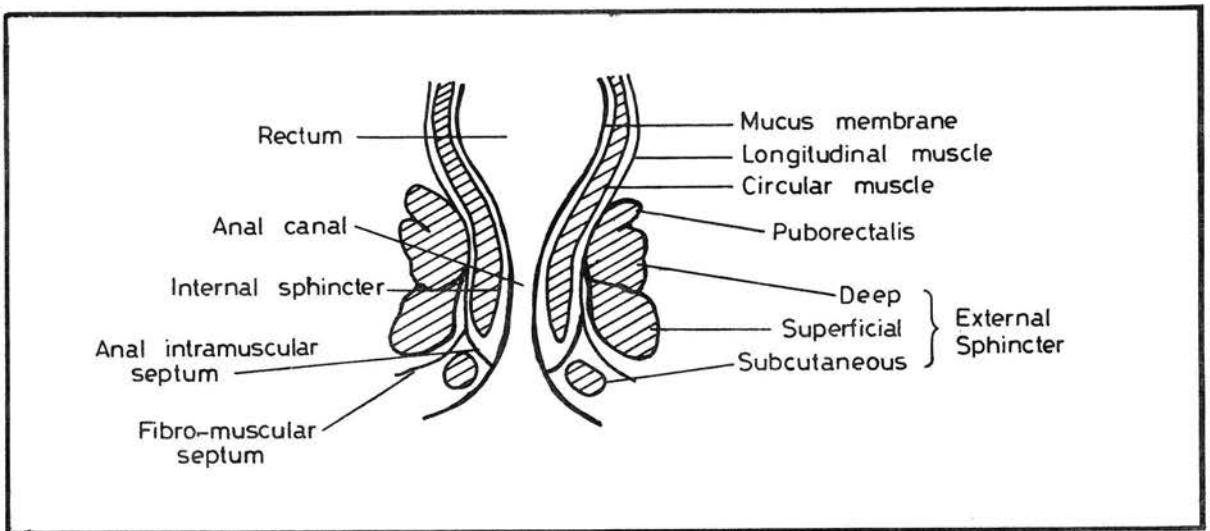


Figure 2: The Anatomy of the Anal Sphincteric Apparatus.

The anorectal ring is formed mainly by the pubo-rectalis which slings the upper end of the anal canal forward in its attachment to the pubic symphysis anteriorly (Fig. 3) thereby angulating and narrowing the anal rectal junction which serves as an efficient bottle-neck stop-gap in faecal movement until defaecation is necessary. This function of the pubo-rectalis forming the anorectal ring is fortified by the fusion to it of the internal anal sphincter, the external anal sphincter and the conjoined longitudinal muscle. It is supplied by the sacral nerves 3 and 4.

The internal anal sphincter is the thickened continuation of the rectal circular muscle. It is supplied by the autonomic nervous system and its action is involuntary.

The external anal sphincter (with its 3 portions- deep, superficial, and subcutaneous) forms like an umbrella around the anal canal. It is supplied by the sacral nerves 3 and 4 and is subjected to voluntary conscious control.

The anorectal ring, the internal anal sphincter, and the external anal sphincter are all braced together by the longitudinal muscle, which traverses through and sends fibres to them on its way to its attachment to the perineal and anal skin.

Normally the anal canal stays closed by the angulation of the anorectal junction and the tonic contraction of the sphincters. When the pressure in the rectum increases as faeces accumulates in it, the internal anal sphincter involuntarily relaxes and there is an impelling urge to defecate. However, defaecation can be controlled and delayed at will by the contraction of the external anal sphincter.

In the act of defaecation, a squatting or sitting position is adopted, and an increased intra-abdominal pressure is developed by the closure of the epiglottis, lowering and fixing of the diaphragm, and the contraction of the abdominal muscles giving the "bearing down" action. This relaxes the anorectal ring and the external anal sphincter, and the faeces is expelled by the enormous intra-abdominal pressure. As the "bearing down" action ceases, when one stops to catch his breath, the sphincters (particularly the external anal sphincter) either contract by themselves or are caused to contract voluntarily to chop off a column of the faeces. The "bearing down" starts again and the whole process is repeated until all the faeces is evacuated from the rectum.

Thus during the act of defaecation, the bone in its final journey out of the anal gateway can get stuck in the anal canal through two chanced occurrences.

1. In between the periods of "bearing down" in the expulsion of the faeces, the chopping off of the column of faeces by the contraction of the sphincters could by chance catch the bone in its transverse position as it travels out of the anus and thus cause the bone to get stuck.
2. The mucus membrane of the anal canal above the dentate line is supplied by the sympathetic nerves and is relatively insensitive. The mucus membrane below the dentate line, the anoderm, is supplied by the cerebrospinal nerves (the inferior haemorrhoidal nerves) and is exquisitely sensitive. It is possible and probable that the bone travelling through the anal canal during defaecation may prick the sensitive

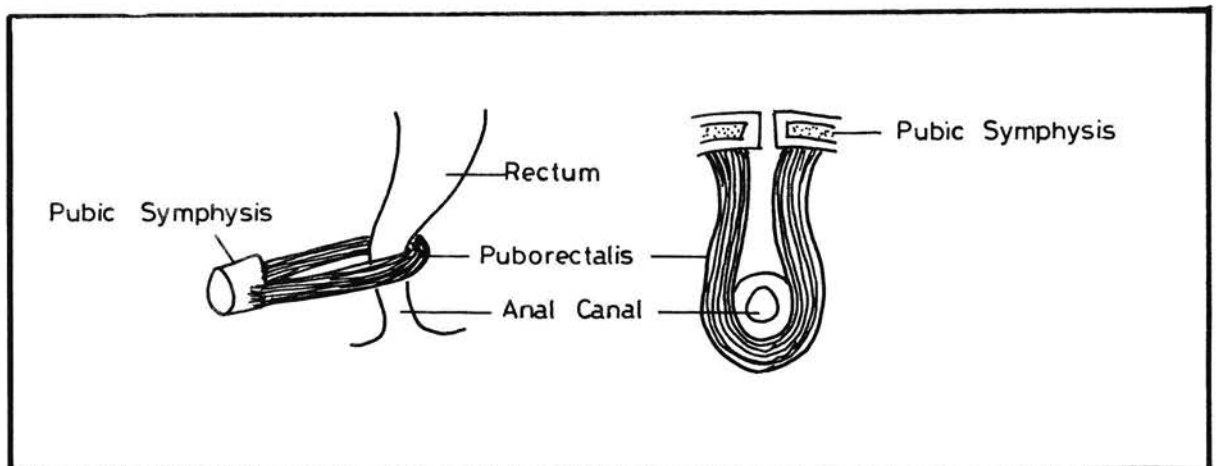


Figure 3: Puborectalis Muscle Sling.

anoderm causing spontaneous involuntary spasm of the internal sphincter which may catch the bone in its transverse position.

In either occurrence, pain causes more muscle spasm, and more muscle spasm causes more pain, thus starting the vicious cycle, and the bone becomes firmly stuck in the anal canal, gripped by the powerful muscle contraction.

It is observed that bone stuck in the anal canal usually occurs when the stool is loose, soft, or diarrhoeal. It is likely that when the stool is firm or hard, the bone, enveloped in it, is protected from the muscle contraction. It is also likely that the firm or hard faeces can propel the bone out, even if it gets stuck, during the forceful act of defaecation. It is deduced from this that perhaps many cases of anal tears and fissures-in-ano could be caused by this forceful expulsion of stuck bone in the anal canal.

Conclusion.

A knowledge that acute pain can often be caused by a piece of bone stuck in the anal canal will make one alert to the possibility in every case of acute

anal pain especially when the patient is a Chinese. A general practitioner practising for several years in a Chinese dominated community, who has never seen a case of acute anal pain caused by a piece of bone in the anal canal, has probably never known or thought of it as possibility and has probably never ever done a PR examination. The diagnosis of bone stuck in the anal canal and the almost instant relief of pain in its removal can be so satisfying not only to the patient but also to the doctor, considering the amount of praises and thanks he usually receives.

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References.

- McGregor, A.L. (1957). *A Synopsis of Surgical Anatomy*. 8th Ed. Wright. Bristol. pp. 99-114.
- Mohan, L. (1975). Unusual Foreign Body in the Rectum. *Med. J. Malaysia*. **29**, 309-310.
- Rains, A.J.H. & Capper, W.M. (1965). *Bailey & Love's Short Practice of Surgery*. 13th Ed. Lewis. London. pp. 1010-1059.

