

Per rectum: a history of enemata

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ABSTRACT Enemas and clysters have been administered since before recorded history, using instruments ranging from cow horns and hollowed out bamboo shoots to metal syringes to inject laxatives, herbs, opium, turpentine, tobacco, oxygen and noxious chemicals. The potentially lethal dangers are today well recognised. The rectal route, now less often used for laxative enemas is still proving useful for other medications, increasingly in suppository form.

KEYWORDS Bowel perforation, clyster, enema, enema syndrome, rectum, steroid, suppository

LIST OF ABBREVIATIONS Intravenous (IV), subcutaneous (SC)

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ENEMAS IN ANCIENT TIMES

Legend has it that Man recognised that cleansing fluids could be inserted into the rectum by watching the sacred Ibis in Egypt. It was seen to take up water in its beak, so curved that it could insert it into its anus to clean out decaying material.¹ The word 'enema' is said to have come from a Greek word meaning 'I throw it in',² but in fact until the late eighteenth century the preferred word was not enema but 'clysters'. Unlike today's enemas, clysters could also refer to vaginal and uterine douches, and bladder lavage.³

There was a reminder of the link with the sacred Ibis in Mesopotamia where a senior physician held the position of Keeper of the Royal Rectum! In different accounts by Thot, this official is portrayed as a monkey, and as a man with a headdress resembling the head of the Ibis surmounted by a solar disc and lunar crescent, holding the siskot or an inkstand with reeds – the symbols of a scribe. According to Pliny, Thot introduced enemas and invented equipment for them; he was the originator of the 'exact sciences' – mathematics and theology – and the author of 42 volumes of medical formulae.⁴

Clysters were used in ancient India where they are listed in the two main texts on treatments, Caraka-Sambita and Susruta-Sambita⁵ and in both Mesopotamia and Egypt where it was recommended that they be used monthly. In Egypt, health was thought to depend on regular cleaning out of the rectum which was associated with residual decaying material which, if not washed out, could enter the bloodstream and cause illness. It is in Egyptian papyri, in particular Eber's (c. 1500 BC), that mention is first made of using the rectum to give medications, over 700 of which are listed with more than 800 formulae.⁵ The first to use the rectal route for introducing nutrients, were

possibly the Mongols who used a cow's horn to the wider end of which they attached an animal bladder to hold the nutritious fluid while the narrow end was inserted into the rectum.⁶

Enemas were used in Greco-Roman times when they were mentioned by Herodotus. He suggested that if enemata were used in patients with wounds, the patient should also be bled. If the enema was being used for purgation, one every three weeks was best.⁶ The Greeks also used enemata to administer astringents, emollients, nutrients, anthelmintics and antispasmodics. A Greek writer, Anct Alexander, writes of 'latroklysterer', literally 'The Enema Doctor' working in Alexandria, presumably an ancestor of today's gastroenterologist.⁶

Celsus (second century AD), living in either Rome or Alexandria, differentiated between enemas and clysters, seeing clysters as less drastic than enema (and also used for vaginal, uterine and bladder lavage) but did not explain why that was so. 'Purgation whilst necessary at time, when frequently used will entail danger for the body becomes subject to malnutrition, since a weakened state leaves it exposed to maladies of all sorts.' Obviously not all agreed with him for he went on to say '... for the most part the bowel preferably is to be clystered [sic] but I see in our time it is usually neglected.'⁷ When Celsus was writing, enemas were often used by women to aid weight loss for cosmetic reasons.

ENEMAS IN THE FIFTEENTH AND SIXTEENTH CENTURIES

Fernel (1497–1558) wrote *Therapeutics*, the definitive textbook of medicine for the sixteenth century. A whole chapter is devoted to purgation including enemas given via a tube to which is fastened a dried pig's bladder. He

recommends lubricating the tube before insertion into the anal canal and the use of one pint or so of weak salt solution to which is added herbs and honey, the patient to be urged to retain it for one to two hours. The indications for such an enema were 'when the stomake [sic] is weak, fever, disability as a result of constipation and headache and colic from whatever cause'.⁸

Fernel was one of the great physicians of the Renaissance. Born in Montdidier, France in about 1497, he studied mathematics, astronomy and philosophy before medicine, qualifying in Paris in 1530. Only four years later he was appointed Professor of Medicine in his old university. Not only did he write some of the earliest treatises on physiology and pathology (coining the names for each and later being called by some 'the father of pathology'), he was a skilled anatomist who performed many autopsies. Like Galen he believed the liver, not the heart, was the key organ for the circulation. Appointed physician-in-chief to the King of France in 1556, he died of a fever two years later at Fontainebleau.

Towards the end of the fifteenth century, Piston invented a metal syringe which, though it was soon in use on the continent, was not used in England until the following century.⁹ However, it was around this time that disputes occurred in England and the continent about who should have the right to give enemas. In 1580, Ambroise Paré (1510–1590), credited with designing apparatus for self-administration of an enema, wrote 'Doctors consider it to be beneath their dignity to sully their hands and leave the administration of enemas to surgeons and apothecaries!'⁹ but details of the original paper have not survived. It is, however, known that enemas containing mercurial compounds were used in the treatment of syphilis. Paré was one of the most distinguished and famous French surgeons of his time. Born near Laval he started life as a barber, then became a barber surgeon at Hôtel-Dieu in Paris before joining the army and finishing his long career as first surgeon and chamberlain to Kings Henry II and Charles IX. He is credited with introducing (or perhaps re-introducing) ligatures to surgery (particularly amputations), instituting improved management of gunshot wounds, perfecting the operation of herniotomy and introducing metal enema syringes to England.

ENEMAS IN THE SEVENTEENTH TO NINETEENTH CENTURIES

Another famous name associated with enemata is that of Santorio Santorio. Born in what is today Slovenia, of a Croatian mother and a wealthy Venetian father, he qualified in medicine from Padua in 1582 at the age of 21. Between 1587 and 1599 he was the personal physician of a nobleman in Croatia. In 1611, he was appointed to the Chair of Theoretical Medicine in Padua, introduced precision instruments into his research and focused on basal metabolism, one of his most famous experiments

TABLE 1 Neonatal enemas of the nineteenth century.

Meat Enema with Pepsin

Essence of meat No 2 – 8 tablespoons
Gelatine – 1 tablespoon
Pepsin – 4 grains
Muriatic acid – 4 drops

First mix the essence and gelatine, and warm in a water bath at 112F; the dissolve the pepsin in a teaspoonful of warm water by the aid of the acid; stir it into the mixture and let the whole remain warm for two hours. Administer warm with two drops of laudanum to secure retention. The bulk of this enema is adapted for a child of eight to twelve years.

Beef-Tea and Brandy Enema

Strong beef tea – 3 tablespoons
Cream – 1 teaspoon
Brandy – 1 teaspoon

Stir all together, and administer gently and slowly. Should this injection not be retained, add two drops of laudanum at each administration.

being on body weight. (He placed himself on a platform suspended from the arm of an enormous balance and weighed his solid and liquid intake and excretion. He found that most of what he had taken in was later lost as perspiration.) However he had to resign his chair in 1629 after his students repeatedly complained that he devoted more time to his many private patients than to his teaching. Leaving Padua he settled in Venice and there designed and promoted an improved model of metal enema syringe.⁵

From 1211 onwards, enemas in France had been given by pharmacists, to the increasing annoyance of the doctors. In 1724, a new law made it illegal for anyone except a doctor to administer an enema, something that would have amused Molière (1622–1673) who so often poked fun at doctors and their expensive but useless enemas.¹⁰ At around the same time a similar law was passed in Holland.¹¹

ENEMAS IN MORE RECENT TIMES

In the nineteenth century there was much enthusiasm in Europe for both colonic lavage and spa waters, each in their own way purging the patient. Particularly in North America, enemas became popular with couples enjoying their spouses administering them, and even arranging to have unrelated devotees of the same sex perform it on them at weekly or more frequent intervals. Today there are websites devoted to this practise and sale of the necessary equipment.

In 1888, a Dr Kellogg of Battle Creek Sanatorium, USA, reported on what he claimed was the first oxygen enema, explaining that the gas could be absorbed through the

TABLE 2 Commonly used North American enemas of the late nineteenth century.

- **Aloes enema** for round worms. (Aloes, potassium carbonate and starch.)
- **Compound aloes enema**, also for round worms, constipation and amenorrhoea.
- **Cathartic enema** for refractory constipation and diarrhoea! (Castor oil, molasses and olive oil.)
- **Compound lobelia enema** for muscle spasm and tetanus. (magnesium sulphate, starch and olive oil.)
- **Opium enema** for inflammation of the bladder, uterus or prostate, calculi, nephritis, dysentery and painful conditions of the large bowel. (Tincture of opium, starch and infusion of elm bark.)
- **Tobacco enema** for strangulated hernia, ileus, faecal accumulations and other bowel obstructions, as well as tetanus. (An infusion of 20 grains of tobacco leaf in eight ounces of boiling water.)
- **Turpentine enema** for tympanic distension of the intestines when confined to the colon, and also for hysteria and amenorrhoea. (Turpentine and starch.)
- **Compound turpentine enema** for flatulence, colonic distension especially during peritonitis as well as for round worms, obstinate constipations and amenorrhoea. (Castor oil, turpentine and tincture of opium.)

rectal mucosa in cases of hypoxia, his theory being based on the gaseous exchange he claimed takes place in the alimentary canals of certain fishes. No mention is made of the danger of air emboli and no records exist of anyone else using such an enema.¹² Another bizarre enema was one made of crushed ice cubes designed to relieve heat exhaustion.¹³ Other long but scientifically unconvincing papers appeared at the end of the nineteenth century on the perceived benefits of rectal nutrition which remained popular. (See Table 1.) A monograph in the Library of the Royal College of Physicians of Edinburgh is devoted to 'Rectal alimentation in the treatment of nausea and inanition of pregnancy.'¹⁴

Physician-prescribed enemas continued to be popular until late in the nineteenth century in the USA. Some examples are shown in Table 2, the indications being as described in the formularies of the time.

Enemas continued to be used well into the twentieth century. It would appear that, with these few exceptions, when prescribed medically the purpose was usually to evacuate the lower bowel and, in obstetrics, by so doing, to stimulate uterine contractions – the classical 'OBE' of castor oil, bath and enema.

In the latter half of the twentieth century with the development of the sub-specialties of care of the elderly and palliative medicine it has been recognised that symptomatic and distressing constipation in the very frail can be a major challenge to clinicians. Sixty-three percent of elderly people in hospital, as compared with 22% of those at home, have significant constipation. Between 50–80% of terminally ill patients admitted to British palliative care units are constipated, presumably because of poor fluid and food intake, bland diet, lack of exercise, and medications.²⁵

Only in the twentieth century did the rectal route assume importance, not solely for the insertion of laxatives, but for a wide range of other indications. This is best illustrated by the fact that in 1888 Martindale's Extra Pharmacopoeia did not list one enema. By 1993 and

1996, only phosphate enemas were mentioned. By 2003, doctors in the UK had 22 drugs and preparations available for rectal administration from bronchodilators to steroids, analgesics to topical medication for haemorrhoids, occasionally as rectal solutions but more usually in suppository form.

THE BENEFITS AND HAZARDS OF THE RECTAL ROUTE

In the middle of the twentieth century it was recognised that only about 50% of a drug given rectally will be absorbed and, by that route, will bypass the liver making the potential for first pass metabolism less than when administered orally.¹⁶ Rectal absorption is irregular, incomplete and unpredictable depending on the health of the mucosa, the blood supply and the presence of extraneous material in the rectum. Presumably an appreciable amount of steroid is absorbed from rectal steroid preparations administered for local effect in the colon. Rectal infusions of saline have been suggested for deprived famine-struck areas where there are not the facilities or personnel for IV or SC rehydration because fluids and salts are principally absorbed in the large intestine.¹⁷

However there are major dangers. Rectal necrosis may follow sodium phosphate enemas even when administered by professionals. Smith *et al.* described rectal ulceration after an apparently minor injury during administration of a 'disposable' enema. Successful treatment necessitated colostomy and antibiotics.¹⁸ They suggest that painless rectal bleeding may be the only sign of injury

In many parts of the world primitive enemas are still being given. The Apache Chiricahuas still pour liquid into a tube then blow it into the rectum.⁷ As recently as 1951, it was reported that Liberians were using gourds to pour herbal medications via a tube into the rectum.¹⁹ The dangers of the procedure itself and of the herbal medicines given per rectum have been recorded for South Africa. There the Bantu use hollowed out bamboo shoots or truncated

cow horns through which they blow mouthfuls of homemade medications into the rectums, principally of babies and young children. Deaths result from perforation of the bowel and subsequent peritonitis. Frequently the relatives see the suffering and death as a features of the illness or spells for which they administered the enema, rather than as a sequel to the enema technique and the traditional medications – ‘muti’ – in the enema. Clinico-pathological features of what has come to be called ‘enema syndrome’ appear within 24 hours of the enema in 68% of patients.^{19,20} The features include progression of the illness for which the enema was given, the adverse effects of the ‘medication’ used, respiratory distress, abdominal distension with severe pain and guarding, hypotonia and loss of consciousness. In-hospital mortality is 28% in South African hospitals, much higher in those receiving herbal enemas (43%) than those receiving chemical enemas (21%) such as Dettol, vinegar, copper sulphate, potassium permanganate and battery acid.^{21,22} A conservative estimate puts the number of enemas given to Bantu children as 100 in their first two years of life and deaths from enemas in South Africa at 5,000 per annum. However, some authorities suggest the figure is much higher.

Even a barium enema examination is not without risk. Complications are reported as occurring in 0.02% to 0.04% of all such enemas. Four possible causes have been suggested:²³

- Trauma from the enema tip;
- Over-inflation of the balloon;
- Recent colonoscopic instrumentation especially associated with biopsy;
- The presence of rectal mucosal disease such as cancer, stricture, diverticulosis or inflammatory bowel disease.

Rectal necrosis has been reported after a routine barium enema. It is recommended that sigmoidoscopic examination is performed before any barium enema.²⁴

CONCLUSIONS

Though enemas and clysters have been used and assumed to be useful for many hundreds of years it is perhaps only recently that attention has been paid to the dangers associated with them, for example in diagnostic procedures, even in skilled hands. Where they are administered by the untrained, as is still the case in Southern Africa, their use can be lethal.

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