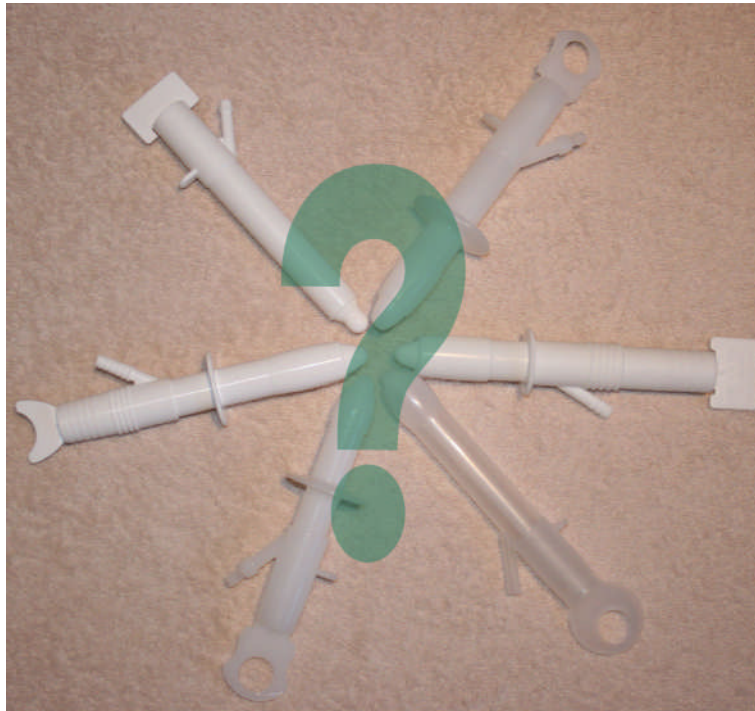


CHOOSING THE RIGHT SPECULUM

By Shoela Detsios, BSc Canada, ND Australia

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Having worked within the industry for a number of years and having a strong foundation of biological sciences, I gladly took the opportunity to evaluate current research on the mechanism of defaecation for Global Professional Association for Colon Therapy. As a result, I have used this information to establish optimal parameters of a speculum, benefiting both client and practitioner. Applying these parameters, comparisons have been made within the commercial domain.

Summary

The importance of a well-designed speculum from the point of view of safety and effectiveness cannot be overlooked. In addition, the needs of the practitioner and client must be met. Naturopathically, the link between the mind and body is key aspect of the health, suggesting that then emotional needs of the clients need to be respected at all times.

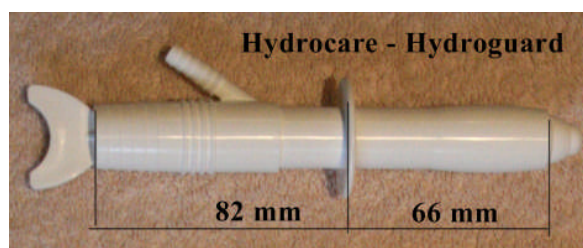
As any therapist knows, how the insertion of the speculum occurs will have great impact on whether a client will physically and emotionally let go. As a result, the need for the ergonomic design of the speculum to ensure appropriate control by the therapist and the ability for the muscles to assist with the 'acceptance' of the

speculum is paramount. In order to fully appreciate the intricate relationship that is occurring, a review of the basic anatomy is essential

A speculum needs to adjust to the complex and gender-specific anatomy and physiology of the anus, the anal canal and the rectum to ensure comfortable bowel evacuation.

After reviewing the mechanism of defaecation and different designs of the specula which are currently available on the market the following observations can be made:

- A speculum should be insertable *at least at 55 mm deep but no deeper than 75 mm*.
- A *protective flange* is thus seen as an advantage from the safety point of view.
- An optimal speculum should have a *bulbous upper part*, allowing the puborectalis muscle to support the speculum in position during the therapy.
- A speculum should have a *tapered end* for ease of attachment of the waste line.
- The obturator should *fit well* into the speculum, and be *easy to handle* during the insertion;



Six different speculum designs were reviewed. I have concluded that Aqua-Clinic/Dotolo Hydrocare-Hydroguard is the safest and the most effective speculum from the point of view of adaptation to the anatomy and physiology of the rectum and the anus enabling facilitation of removal of the faecal matter.

Summation of my observations are below.

Mechanism of defaecation

The Anus

Defaecation in humans is subject to strict regulatory control from the brain and the central nervous system. The design of the lowermost part of the large bowel reflects this by providing a mechanism for stopping the faeces falling out continuously, as it is the case with some other mammals.

The anus (Figure 1) is the final opening of the GI (gastro-intestinal) tract through which stools/faeces (ie, the waste products of digestion) pass out of the rectum and are eliminated from the body. The act of passing stools is called a 'bowel movement' or 'opening your bowels'.

The anal canal, or the terminal portion of the large intestine, begins at the level of the apex of the prostate (in males), is directed downward and backward, and ends at the anus.

It forms an angle of 80 to 90 degrees with the lower part of the rectum, and measures from 2.5 to 4 cm. in length.

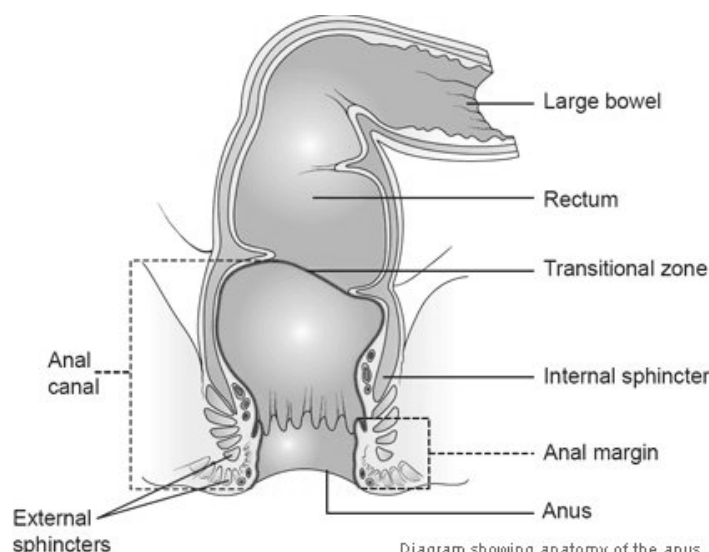


Figure 1 - The Anus

The nervous system triggers the urge to pass stools. Many people feel this urge upon waking in the mornings. Others may feel it soon after eating a meal (eg, just after eating breakfast or lunch) - it may be the digestive system's way of removing stored wastes before re-starting the process of digestion .

The anus and the anal canal are surrounded by very strong internal and external anal sphincters. These muscles normally keep the anus closed. At the time of opening the bowels, the muscles contract and expand to open the anus and allow stools to pass.

The rectum

The rectum (see Figure 2) is 12–15 centimetres (about 5–6 inches) long.

Although there is a common belief that the rectum is straight in humans (mainly due to the fact that the Latin verb “regere” means “straighten”), **it is actually curved along the sacrum, and, as already mentioned above, attaches to the anal canal at an angle of 80–90 degrees.**

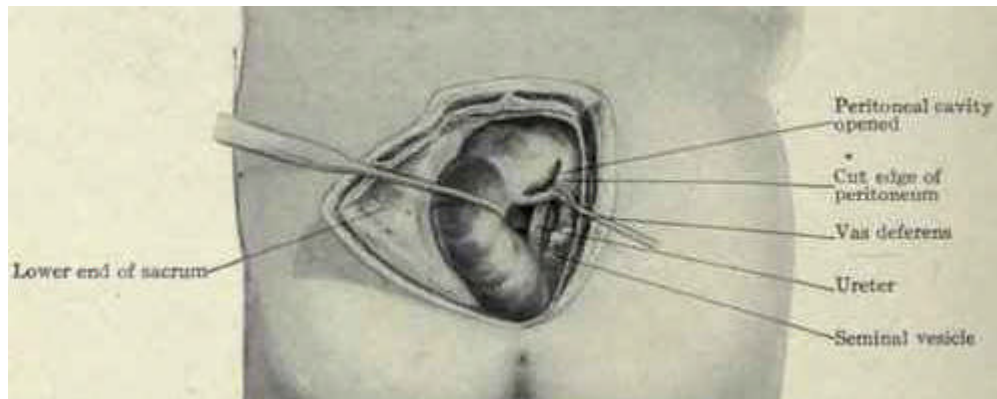


Figure 2 - The Rectum

(Gwilym G. Davis: Applied Anatomy: The Construction Of The Human Body, 1913 J. B. Lippincott Company)

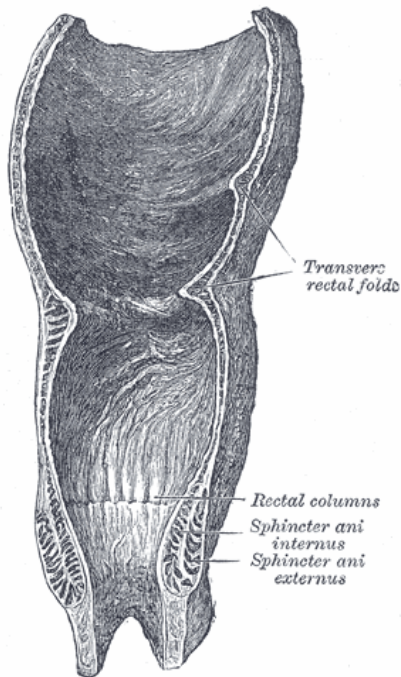
Contrary to another popular belief, in a healthy individual the rectum is usually empty. However, it is very sensitive to distension – a lot more so than other parts of the large bowel. It can detect faecal volumes as low as 80 mm, and at around 400 mm the urge to defaecate becomes irresistible.

When the rectum is distended by stool or gas passing down from the colon, the internal sphincter (the upper one) relaxes slightly, allowing some of the rectal contents to pass into the anal canal.

The lining of the anal canal is very sensitive and can detect the difference between solid, liquid and gas. If it detects gas, the anal sphincters usually relax even more, allowing the gas to escape as flatulence. Liquid in the anal canal usually leads to a desperate desire to defecate, which has to be countered by a conscious effort to tighten the anal sphincter. When the anal canal detects solid matter, it gives us a choice: settle down to defecate, or contract the anal sphincters strongly, pushing the faeces back into the rectum until it is more convenient for us to go to the toilet.

Transverse rectal folds (valves of Houston)

Houston's valves (or transverse folds of rectum – Figure 3) are semi-lunar transverse folds of the rectal wall that protrude into the anal canal. Their use seems to be to support the weight of fecal matter, and prevent its urging toward the anus, which would produce a strong urge to defecate. During an empty state of the rectum, these transverse folds overlap each other to such an extent that they sigmoidoscopes and colonoscopes difficult to manoeuvre.



These folds are about 12 mm. in width and are composed of the circular muscle coat of the rectum. They are usually three in number; sometimes a fourth is found, and occasionally only two are present.

- One is situated near the commencement of the rectum, on the right side.
- A second extends inward from the left side of the tube, opposite the middle of the sacrum.
- A third, the largest and most constant, projects *backward* from the forepart of the rectum, opposite the fundus of the urinary bladder.
- When a fourth is present, it is situated nearly 2.5 cm above the anus on the left and posterior wall of the tube.

Figure 3 - Valves of Houston

Rectal positioning in men and women

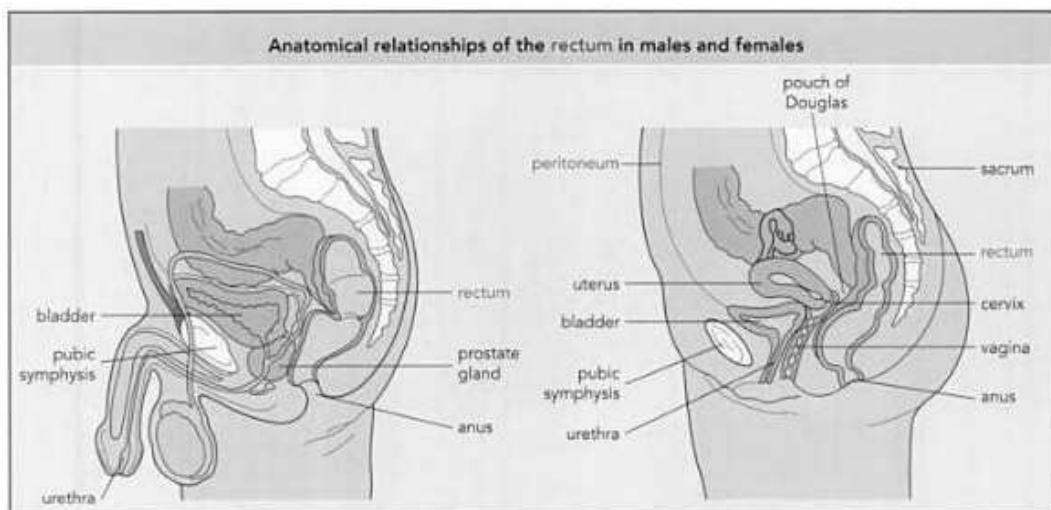


Figure 4 - Rectal Positions in Men/Women

(Clinical Examination by Owen Epstein MB BCh FRCP, G. David Perkin BA MB FRCP, John Cookson MD FRCP, and David P. de Bono MA MD FRCP (Paperback - 25 April 2003) P 206)

The rectum is the curved lower, terminal segment of large bowel. It is about 12 to 15 cm long and runs along the concavity of the sacrum.

Anterior to the lower 1/3 of the rectum lie different structures in men and women:

- In men, anterior to the lower 1/3 of the rectum lie the prostate, bladder base and seminal vesicles.
- In women, anterior to the lower 1/3 of the rectum lies the vagina. The anus which is 3-4 cms long and joins the rectum to the perineum (the area between the anus and the vulva).

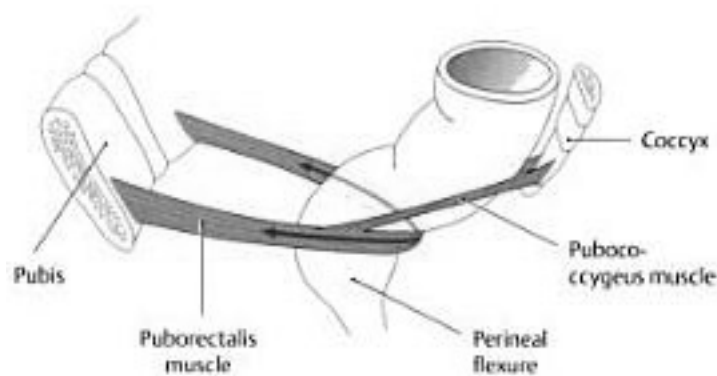
As we can observe (Figure 4) the curvature of the female rectum is expressed stronger than the curvature of the male rectum.

Defaecation and the role of pubo-rectalis muscle

The pubo-rectalis is one of the muscles in the pelvis. It runs from the pubic bones at the front, towards the back, around the lower end of the rectum, and back to the pubic bone (Figure 5).

The puborectalis acts as “a sling” around the proximal end of the fourth (if present) or the distal end of the third valve of Houston, pulling the rectum forward **to create an 80–90 degree angle between the rectum and the anal canal.**

When we defecate, the pubo-rectalis muscle relaxes, allowing this angle to expand out so that the stool can pass out more easily.



The muscles in the abdominal wall contract, increasing the pressure within the abdomen and forcing the stool to pass out of the large bowel.

Figure 5 - The Puborectalis Muscle

Schematically, defaecation can be represented as follows (Figure 6):

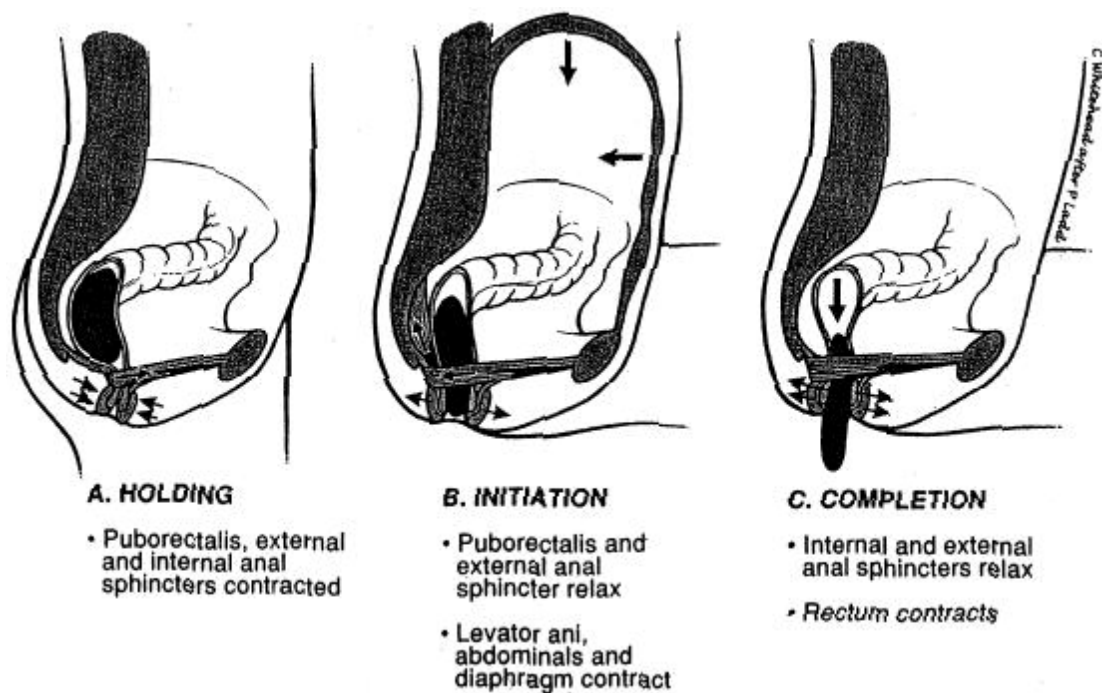


Figure 6 - Puborectalis in Defaecation

The angle of the rectum to anus will be reduced to a greater extent in the squatting position rather than in the sitting or lying position:

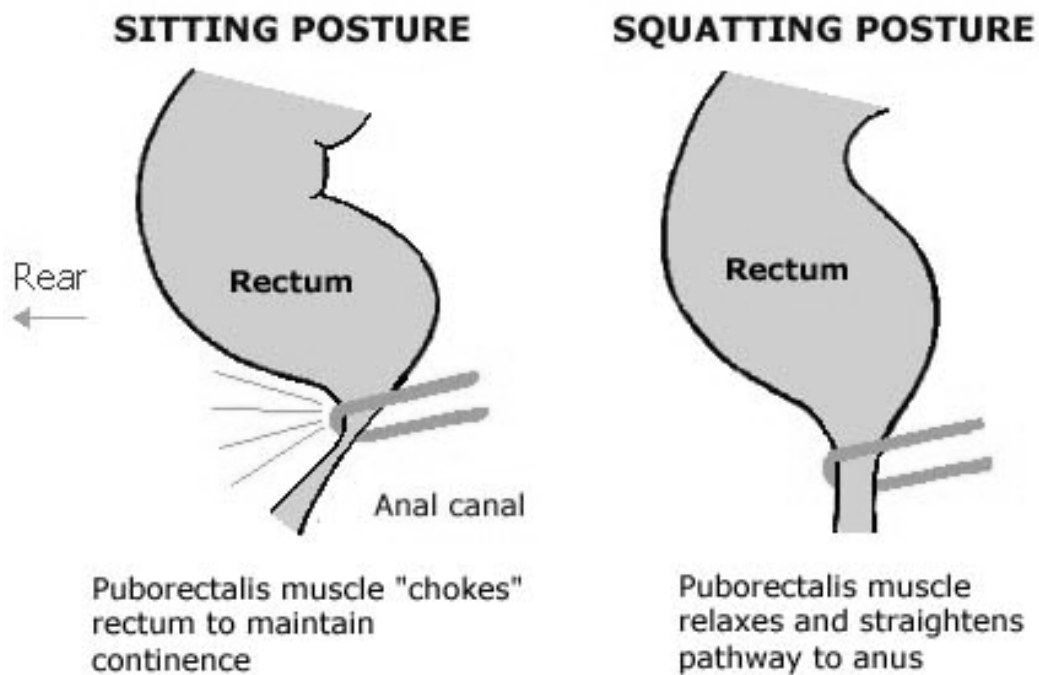


Figure 7 - Rectum angle adjustment

Requirements to an optimal speculum

The purpose of a colon hydrotherapy speculum is to facilitate removal of the wastes. Its design should take account of the following:

- The length of the anal canal – up to 40 mm on the average;
- The fact that the anus is tightly closed during the resting state but the anal opening can stretch during defaecation;
- The sharp angle between the anal canal and the rectum;
- The positioning of the puborectalis muscle sling around the terminal section of the rectum which is around 40-50 mm in length;
- The rectal folds that have the potential of entrapping the speculum;
- The need for a smooth surface of the speculum and the border between the speculum and the obturator;
- The need for control of the insertion by the therapist;
- The need for easy management of the obturator by the therapist;
- The need for ease of attachment of water and waste lines.

The average combined length of the anus, anal canal and the rectum varies between 145 and 190 mm, with the sharp angle situated between 55 and 75 mm from the anus just past the puborectalis sling.

Therefore, the speculum should be insertable at least 55 mm deep but no deeper than 75 mm. A protective flange is thus seen as an advantage from the safety point of view. This will make sure that the speculum has covered the length of the anus and opened the puborectalis muscle and gone past it but stopped short of being pushed into the blind alley of lower rectal valve, which may also force the rectum into an unnatural angle stressing it during the treatment.

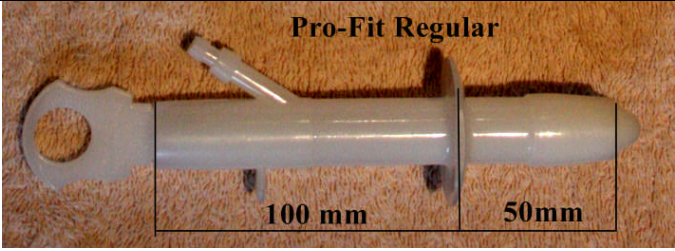
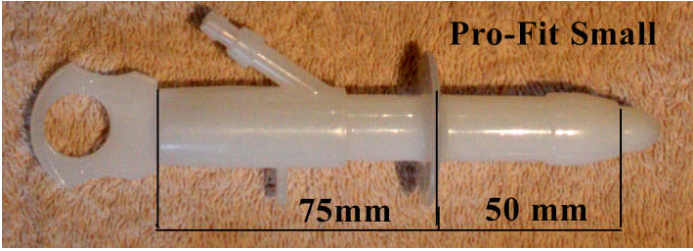
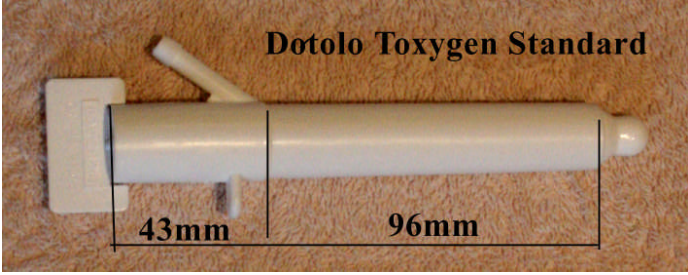
Ideally the speculum should have a bulbous upper part, allowing the puborectalis muscle to support the speculum in position during the therapy.

Specula reviewed

1. Pacific Health Pro-Fit Regular
2. Pacific Health Pro-Fit Small
3. Transcom Regular
4. I.C.H.F Regular
5. Dotolo Research Regular
6. Aqua-Clinic-Dololo Hydrocare-Hydroguard

The results of the analysis are represented in the table below:

- Features that are deemed both safe and optimal for the purposes of effective bowel evacuation and highlighted in green.
- Features that are present but do not contribute to the overall efficiency or safety is highlighted in purple.

Make / photo	Smooth surface/ border	Bulbous top	Safety flange	Insertion depth	Obturator design	Tapered barbed end	Notes
 <p>Pro-Fit Regular</p> <p>100 mm 50 mm</p>	✓	✓	✓	50 mm	✓	✓ Slightly tapered but not barbed	Insertion depth may not be sufficient to ensure puborectalis support; speculum may be pushed out by the muscle. No barb can make attaching the waste tubing awkward. Bigger fingers can get stuck in the obturator circle. Bulbous top end will help smooth insertion.
 <p>Pro-Fit Small</p> <p>75 mm 50 mm</p>	✓	✓	✓	50 mm (for children only)	✓	✓ Slightly tapered but not barbed	This speculum is designed for children and very small adults. Insertion depth may not be sufficient for tall/lean individuals including children. No barb can make attaching the waste tubing awkward. Bigger fingers can get stuck in the obturator circle during insertion. Bulbous top end will help smooth insertion.
 <p>Dotolo Toxygen Standard</p> <p>43 mm 96 mm</p>	✓			96 mm	✓	✓	Caution required for preventing over-insertion. Straight design makes puborectalis grip more difficult. Absence of flange makes the insertion fully dependent on the judgement and level of awareness of the practitioner. Flat obturator edge is safe for any situations.

 <p>Transcom Regular 43 mm 103 mm</p>	✓	✓		103 mm	✓	✓	<p>Definite caution required to prevent over-insertion. Expanded water line retainer may make the water line attachment awkward. Absence of flange makes the insertion fully dependent on the judgement and level of awareness of the practitioner. Obturator circle is small and can easily trap bigger fingers.</p>
 <p>I.C.H.F Speculum 98 mm 56 mm</p>		✓	✓	56 mm	✓	✓ Slightly barbed but not tapered	<p>This is a wide speculum designed for larger people, therefore the 56 mm insertion depth may not sufficient to ensure puborectalis support; speculum may be pushed out by the muscle. No taper can make attaching the waste tubing awkward. Bulbous top edge is sharp. The obturator fit to the speculum is poor.</p>
 <p>Hydrocare - Hydroguard 82 mm 66 mm</p>	✓	✓	✓	66 mm	✓	✓	<p>Soft long bulbous top ensures puborectalis grip between the end of the bulb and the flange at 66 mm. Good safe and effective design of the obturator suitable for any shape and size of finger. Tapered barbed end. Very smooth transition between speculum and obturator.</p>

Conclusion

All specula reviewed are on the market and are being used and continue to be used by colon therapists. However the review revealed some design feature in all of them that could be improved, with some makes in need of improvement more than the others.

On the whole, of all specula reviewed, Aqua-Clinic-Dololo Hydrocare-Hydroguard appears to have the optimal balance between safety features and efficiency of design. As result, this design addresses the needs of the client and practitioner for a successful treatment.

