CADAVERIC DISSECTION FOR THE RECTAL SURGERY

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CADAVERIC DISSECTION FOR THE RECTAL SURGERY (Abstracts): The benefits of total mesorectal excision are due to the complete excision of the mesorectum with preservation of the pelvic autonomic nerve plexuses, the hypogastric nerves and nervi erigentes(1). Several important structures are difficulty to seen in operation but at cadaveric dissection is a helpful exercise in demonstrating them. We dissected 2 cadavers illustrating the anatomical aspects. Many authors have discussed the presence and the importance of the lateral ligaments of the rectum. Our contribution aims at clarifying some aspects of surgical anatomy that help in the preservation of the urogenital functions and may influence the surgical practice. Key words: RECTUM, MESORECTAL EXCISION

INTRODUCTION

In Embryology for Surgeons (2), the mesorectum was neither mentioned nor discussed. Gray’s Anatomy (3) refers to the “dorsal meso- rectum…which does not form a true mesentery, however, but. … a woven fibroreolar sheet with patterned variations in thickness and fibre orientation.” The rectum is said to differ from the sigmoid colon by having “no sacculations, appendices epiploicae or mesentery” (3). Heald and colleagues (4) have published multiple excellent articles providing a complete education about the mesorectum. Heald (5) defines the mesorectum as “the integral visceral mesentery surrounding the rectum … covered by a layer of visceral fascia providing a relatively bloodless plane, the so-called ‘holy plane’. The dorsal mesentery is embryologically responsible for the genesis of the mesorectum.

Over the last few years there has been increasing interest in and a certain amount of debate over total mesorectal excision (TME) in the management of rectal carcinoma. The key to the operation is the complete excision of the mesorectal package with preservation, where possible, of the hypogastric nerves, nervi erigentes and the inferior hypogastric plexuses and their branches. The nerves can serve as markers for the limits of resection, and their conservation minimizes postoperative sexual and urinary dysfunction. Posteriorly, this plane is located between the visceral fascia which surrounds the mesorectum and the parietal presacral fascia (fascia of Waldeyer). In the male, Denonvilliers’ fascia constitutes the anterior surface of the mesorectum, which is fused with the posterior surface of the fascia of Denonvilliers’. Inferiorly, the mesorectum and the fascia of Waldeyer condense to form the recto- sacral ligament in the vicinity of S4 (6).

MATERIALS AND METHODS

We performed anatomical dissections on 2 formalised male cadavers. We were especially interested in dissecting the mesorectum with arterial branches of the rectum and the hypogastric plexus. The arteries of the rectum and anal canal are the unpaired superior rectal artery,
the paired middle and inferior rectal arteries, and the median sacral arteries.

RESULTS

The superior rectal (hemorrhoidal) (Fig 1) artery arises from the inferior mesenteric artery and descends to the posterior wall of the upper rectum. Supplying the posterior wall, it divides and sends right and left branches to the lateral walls of the middle portion of the rectum down to the pectinate (dentate) line. We find the middle rectal (hemorrhoidal) arteries in one case on the lateral rectal stalks. The inferior rectal (hemorrhoidal) arteries arise from the internal pudendal arteries and proceed ventrally and medially to supply the anal canal distal to the pectinate line.

The median sacral artery arises just above the bifurcation of the aorta and descends beneath the peritoneum on the anterior surface of the lower lumbar vertebrae, the sacrum, and the coccyx. It sends several very small branches to the posterior wall of the rectum (6).

Using an anterior sagittal approach to expose retroperitoneal viscera and nerves, the anatomy of the pelvic autonomic nerve plexus was studied in normal male cadaver specimens. This plexus is found on the anterolateral surface of the lower rectum surrounded by endopelvic fascia. The autonomic nerves that supply the plexus reach it from posterior, lateral to the midline by passing over the surface of the rectum. The nerves of this plexus are distributed with the terminal branches of the internal iliac arteries, mainly with the vessels of the inferior vesical plexus. The rectum receives its autonomic nerves with its arterial blood supply, the superior rectal artery. The nerves of the pelvic plexus supply the genitourinary viscera that lie anterior to the rectum and in front of the fascia of Denonvilliers. (Fig 2) The named fascial layers of the pelvis play a major role in determining the anatomic plane of these structures (6).

Since the pelvic parasympathetic nerves are responsible for erection and the sympathetic nerves of the hypogastric plexus (Fig 3) are responsible for ejaculation, the surgeon should be familiar with the pathway of these nerves and dissect the posterior rectal wall from the sacrum, the prostate, and the lateral pelvic wall as close to the posterior rectal wall as possible.

Having recognized and free both ureters, the peritoneum was removed to show the aortic plexus. The pelvic splanchnic nerves were individually identified and traced from their origin to termination. The rectum, the mesorectum (fig 4, 5), and the lateral ligaments were isolated with particular attention to the anatomic relationship between the middle rectal vessels and the splanchnic nerves (urogenital bundle). Denonvilliers’ fascia was identified and dissec-
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Detailed knowledge of the embryology and anatomy of the rectum is fundamental to successful surgical resection of rectal cancer. While anatomists can usually enthusiastically define fascial layers, we often miss the mesorectum because of the structural distortion found in postmortem specimens and the obliteration of the plane between these fascial layers caused by conventional fixatives. Our attempts to dissect the rectum in fixed cadavers using total mesorectal excision (TME) techniques have demonstrated the difficulty in outlining these planes around the rectum.

CONCLUSION

BIBLIOGRAPHY