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## LAPAROSCOPIC-ASSISTED COLPOPOIESIS USING LARGE BOWEL AUTOGRAFT FOR THE MAYER–ROKITANSKY–KÜSTER–HAUSER SYNDROME SURGICAL TREATMENT

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### ЛАПАРОСКОПИЧЕСКИ-АССИСТИРОВАННЫЙ КОЛЬПОПОЭЗ С ИСПОЛЬЗОВАНИЕМ КИШЕЧНОГО АУТОТРАНСПЛАНТАТА В ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ СИНДРОМА МАЙЕРА — РОКИТАНСКОГО — КЮСТЕРА — ХАУСЕРА

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Цель настоящего исследования — улучшение ближайших и отдаленных результатов лапароскопически-ассистированного кольпопоэза с использованием кишечного аутотрансплантата. В период с 1996 по 2012 гг. нами прооперированы 37 пациенток с вагинальной агенезией (синдром Майера — Рокитанского — Кюстера — Хаусера).

Не наблюдалось ни одного случая конверсионной лапаротомии или значительных послеоперационных осложнений. Послеоперационное гинекологическое исследование демонстрировало хорошую морфологию неовагины. Все пациентки отмечали удовлетворительную половую жизнь.

**Ключевые слова:** лапароскопически-ассистированный кольпопоэз, кишечный аутотрансплантат.

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The purpose of this study is to evaluate short, and long-term results of laparoscopic-assisted colpopoiesis, using large bowel autograft for the surgical treatment of 37 patients with vaginal agenesis (Mayer–Rokitansky–Küster–Hauser syndrome), operated between 1996 and 2012.



There were no cases of conversion to laparotomy and no cases of major postoperative morbidity. The follow-up period was 97 (range 5–187) months. Gynecological examinations demonstrated good morphology of the artificial vagina. All patients reported a satisfying sexual life. The sigmoid colon autograft method of vagina reconstruction produces results which are very close to the natural anatomy and vaginal function. For the patients with a vestibule-rectal fistula, we devised a laparoscopic technique of colpopoiesis using a rectal stump autograft. The laparoscopic technique of colpopoiesis is feasible, safe, and seems to be the treatment of choice for the congenital vaginal agenesis.

**Key words:** laparoscopic-assisted colpopoiesis, sigmoid colon autograft.

Mayer–Rokitansky–Küster–Hauser (MRKH) syndrome is a rare congenital cause of primary amenorrhea, due to the utero-vaginal agenesis. Some patients also have ectopic kidneys or renal agenesis, and some skeletal and auditory abnormalities. The incidence of MRKH syndrome has been estimated as 1 in 4.500 female births [1]. These patients have karyotype 46-XX, normal ovaries, normal female range testosterone level, normal secondary sexual development, but the absent uterus and upper vagina.

Various techniques of artificial vagina construction have been developed for the treatment of a congenital absence of the vagina (MRKH syndrome). These techniques may be classified as methods using a free skin graft, pelvic peritoneum, and colon autograft [2]. All three types of techniques have been used in our hospital since 1972. In 1996, S. Ohashi, K. Ikuma et al. first introduced the laparoscopic technique of colpopoiesis using a sigmoid colon autograft [2].

This new approach promises to achieve the best functional results and maintain cosmetic superiority, because of the two keys for success: best host tissue material, and minor invasive surgery approach.

**The purpose** of this study is to evaluate short- and long-term results of laparoscopic-assisted colpopoiesis using sigmoid colon autograft.

The 37 young female patients (aged 19–29 years) with MRKH syndrome were operated laparoscopically during a period of 1996–2012. All of them had a history of amenorrhea. A gynecological examination revealed blind vaginal introitus. Their se-

condary sexual development was normal. In 4 (8.1%) patients the single right kidney was found. The uterus was not detected by sonography. In two patients a posttraumatic vestibule-rectal fistula complicated the congenital agenesis of the vaginal (after the first unsuccessful attempt to engage in sexual intercourse). The defect in the vestibule-rectal septum was about 2.5 cm in size. 35 patients with uncomplicated congenital vaginal agenesis underwent a laparoscopic colpopoiesis, using a sigmoid colon autograft. In 2 cases of the vestibule-rectal fistula the original laparoscopic-assisted reconstruction of the vagina using a rectum autograft was applied. Preoperative study included routine laboratory tests, determination of karyotype, pelvic CT-scan, barium enemas, proctosigmoidoscopy, and ano-rectal manometry.

### Surgical Technique

Laparoscopy of the pelvic cavity usually showed a normal anatomy of ovaries, round ligaments, and fallopian tubes, which join each other at the midline. At this place the fallopian tubes looked thicker and, in some cases, looked like a vestigial uterus.

The distal third of the sigmoid colon was grasped and elevated for the sigmoid arteries inspection. The sigmoid colon segment, about 15 cm long with a vascular pedicle, was selected for isolation and translocation (pull-through out of the pelvic cavity to the perineum). Isolation of the sigmoid colon autograft was performed using a 60-mm endoscopic linear stapler-cutter. Afterwards a transverse incision of perineal skin was made in place of the vaginal vestibule. A

finger was introduced through this incision as a guide to facilitate the laparoscopic determination of the proper plane for the pelvic peritoneum incision. The sharp dissection was continued anteriorly between the bladder and rectum in order to make a pelvic tunnel. The distal end of the sigmoid colon autograft was pulled through the developed pelvic tunnel to the vaginal exterior, and was then sutured to the perineal skin in order to create a vaginal introitus. The proximal blind end of the sigmoid colon autograft was left free in the pelvic cavity. The intestinal discontinuity was restored via the end-to-end anastomosing, using the circular stapling device.

In two cases of the vestibule-rectal fistula the following technique was applied. The left colon was dissected up to the splenic flexure out of its lateral attachments. The inferior mesenteric artery was divided using a 35-mm endoscopic linear cutter or using “LigaSure” device. The mesorectum was dissected posteriorly down to the levator muscles in the avascular plane between the parietal and visceral pelvic fascia in order to create a wide retrorectal tunnel. The bowel was divided at the level of the rectosigmoid using a 60-mm linear stapler-cutter. The “blind” rectal stump, together with the vestibule-rectal fistula were prepared for the construction of the artificial vagina; the defect of the vestibule-rectal septum and of the anterior rectal wall was used as a “previously done” vaginal introitus. To complete the creation of the artificial vagina the rectum was divided from the anal canal via perineal transanal approach. The transected distal end of the rectum (posterior wall)



was sutured to the mucosa of the "neo-vestibulum" along the lower edge of the vestibule-rectal defect. The proximal bowel segment was pulled through the retrorectal tunnel in order to create a low coloanal anastomosis, applying single sutures transanally.

### Results

There were no intraoperative complications requiring conversion to laparotomy. Patients start oral intake and walking the day after surgery. The operating time was about 180 min. Postoperative complications (bleeding), which had required additional surgery, occurred in 1 (2.7%) patients. No bowel anastomosis leakage was found. There were 4 (10.8%) patients who experienced a minor stricture of the vaginal introitus (treated successfully using dilation).

The mean postoperative hospital stay was 4.2 days. The mean follow-up period was 97 months (range 5–187 months). A gynecological examination showed good morphology of the artificial vagina, created both with a sigmoid colon autograft (35 cases) and with a rectal stump (2 cases). 33 (89.2%) patients reported a satisfying sexual life, and 21 (56.8%) of them got married.

### Conclusion

The sigmoid colon autograft method of vagina reconstruction produces results which are very close to the natural anatomy and vaginal function. For the patients with a vestibule-rectal fistula, we devised a laparoscopic technique of colpopoiesis using a rectal stump autograft. The laparoscopic technique of colpopoiesis is feasible, safe, and seems to

be the treatment of choice for the congenital vaginal agenesis.

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## COMBINED INJURIES OF BILIARY DUCT AND BRANCHES OF A HEPATIC ARTERY FOLLOWING CHOLECYSTECTOMY

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СОЧЕТАННЫЕ ПОВРЕЖДЕНИЯ ЖЕЛЧНЫХ ПРОТОКОВ И ВЕТВЕЙ ПЕЧЕНОЧНОЙ  
АРТЕРИИ ПРИ ХОЛЕЦИСТЭКТОМИИ

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В работе изучены результаты лечения 29 больных с сочетанными повреждениями желчных протоков и ветвей печеночной артерии при холецистэктомии за период с января 1984 г. по июнь 2012 г. У 2 (6,9 %) пациентов предприняты попытки восстановления артериального кровотока с последующим реконструктивным вмешательством на желчных протоках. У 19 (65,5 %) больных в условиях адекватного коллатерального кровоснабжения печени сформирован гепатико-еюноанастомоз. В одном случае предварительно проведена эндоваскулярная эмболизация аневризмы печеночной артерии, осложненной гемобилией. Различные по объему резекции печени выполнены у 8 (27,6 %) больных. Послеоперационная летальность — 3,5 %. Положительные результаты получены в 86,2 % наблюдений. У больных с сочетанными повреждениями желчных протоков и ветвей печеночной артерии при холецистэктомии необходимо применение мультимодальной тактики лечения с учетом особенностей их клинического течения.

**Ключевые слова:** сочетанное повреждение желчного протока и ветвей печеночной артерии, холецистэктомия.

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COMBINED INJURIES OF BILIARY DUCT AND BRANCHES OF A HEPATIC ARTERY  
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There were studied the results of treatment of 29 patients with combined injury of biliary ducts and hepatic branches at cholecystectomy during the period from January 1984 to June 2012. Attempts of arterial blood supply restoration with the subsequent reconstructive intervention on biliary ducts were

