

Low incidence of perineal hernia repair after abdominoperineal resection for rectal cancer

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ABSTRACT

INTRODUCTION: Perineal hernia may be a long-term complication to conventional abdominoperineal resection or proctocolectomy. We analysed the incidence of post-operative perineal hernia repair and described patient-reported outcome measures (PROMS) after perineal hernia repair.

METHODS: This was a nationwide retrospective analysis of consecutive Danish patients undergoing conventional abdominoperineal resection or proctocolectomy for rectal cancer from 1 January 2004 to 31 December 2014 combined with patients undergoing a subsequent repair for a perineal hernia during the follow-up period from 1 January 2004 to 31 December 2016. Patients were sent a quality of life questionnaire (HerQles A) and related PROMS.

RESULTS: The incidence of perineal hernia repair was 0.83%. A total of 2,170 patients underwent proctocolectomy and conventional abdominoperineal resection, and 18 patients had a subsequent perineal hernia repair. Four patients developed a clinical hernia recurrence, another four patients reported moderate/severe perineal pain or heaviness during physical activity and complained of poor perception of health, and one patient reported that the perineal hernia repair had a negative impact on sexual function.

CONCLUSIONS: The incidence of perineal hernia repair was below 1% after conventional abdominoperineal resection and proctocolectomy. PROMS and risk of recurrence may benefit from centralising perineal hernia repair.

FUNDING: none.

TRIAL REGISTRATION: not relevant.

Perineal hernia can be defined as a protrusion of intra-abdominal contents through an acquired defect of the pelvic diaphragm [1]. Colorectal cancer is one of the most common cancers in the Western world [2]. The incidence of perineal hernia repair following conventional abdominoperineal resection and proctocolectomy is poorly investigated, but may be in the 0.34-11.8% range [3-8]. The correct incidence may be even higher because asymptomatic perineal hernias not requiring surgical repair will often not be registered. Symptoms associated with perineal hernia may be disabling; they include primarily bulging with discomfort or pain, secondarily urinary dysfunction, skin problems and more rarely intestinal obstruction [1]. The literature on surgical repair for

post-operative perineal hernia is limited [8-13]. The optimal repair technique, the risk of recurrence and the patient-reported outcome measures (PROMS) therefore remain unknown.

The aims of this study were to estimate the surgery incidence for post-operative perineal hernia following conventional abdominoperineal resection and proctocolectomy for rectal cancer and to report the clinical outcomes and PROMS after perineal hernia repair.

METHODS

This was a nationwide retrospective analysis of consecutive Danish patients undergoing conventional abdominoperineal resection or proctocolectomy for rectal cancer from 1 January 2004 to 31 December 2014 combined with patients having a subsequent repair for a perineal hernia during the follow-up period from 1 January 2004 to 31 December 2016. The data sources were the Danish National Patient Registry and the Danish Colorectal Cancer Group database. The patients' medical records were reviewed for demographics, details on primary surgery, date of first report of a perineal hernia diagnosis, characteristics and surgical management of the perineal hernia, intra- and post-operative complications, and date of clinically diagnosed recurrence. Information about operation for recurrence was provided by the Danish National Patient Registry. Patients undergoing extralevator abdominoperineal excision, intersphincteric abdominoperineal excision and coccygectomy were not included in the analysis.

Patients undergoing a perineal hernia repair were sent a validated hernia-related quality of life questionnaire (HerQles) which included a verbal rating scale with questions on pain and heaviness from the perineum during physical activity, daily work and leisure (none, mild, moderate or severe pain or heaviness). In addition, patients were asked about possible negative effects of the perineal hernia repair on performing household chores and about their perception of their health and sexual function (disagree, slightly disagree, slightly agree or agree).

The study was approved by the Danish Data Protection Agency and the Danish Health Authority prior to study start.

ORIGINAL ARTICLE

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Dan Med J
2017;64(7):A5383

Statistics

The study was descriptive, explorative and hypothesis-generating. Data are presented as median (range). The nature of the study design precluded sample size calculation.

Trial registration: not relevant.

RESULTS

The incidence of perineal hernia repair was 0.83% – 2,170 patients underwent proctocolectomy and conventional abdominoperineal resection, and 18 patients underwent a subsequent perineal hernia repair. Details about patients, rectal cancer operation and perineal hernia repair technique are presented in **Table 1**.

Of the 18 patients who developed perineal hernia following conventional abdominoperineal resection or proctocolectomy, 13 patients had the pelvic defect closed by suture without reinforcement at the primary operation. A fasciocutaneous gluteal flap (n = 2) or biological mesh (Permacol; Covidien, Mansfield, Massachusetts, USA) (n = 3) was also used as closure method. Complications were seen in two patients who developed post-operative perineal wound infection after rectal resection (treated conservatively).

The median time to perineal hernia repair was 19 months (range: 4-123). The 18 perineal hernia repair procedures were performed at six surgical centres in Denmark. The surgical hernia repair technique was done

by perineal approach (n = 14), abdominal approach (n = 2) or combined abdominoperineal approach (n = 2). A total of 16 patients had a mesh repair and only two patients had another type of repair performed (Table 1). Perineal wound infection (treated conservatively) was observed in one patient (perineal approach with Permacol).

The median follow-up after hernia repair was 27 months (range: 6-85). During this period, four of the 18 patients (all four operated by perineal approach with Permacol reinforcement) developed a recurrence. Thus, three patients were operated for recurrence and one was treated conservatively. Three patients died during follow-up and three patients were lost to follow up, resulting in 12 responders to the HerQles A questionnaire and PROMs (Table 1).

Four patients reported moderate/severe perineal pain or heaviness during physical activity and complained of poor perception of health, and one patient reported a negative impact on sexual function due to the perineal hernia repair (Table 1).

DISCUSSION

In the present nationwide study, we found a low incidence of perineal hernia repair (below 1%). However, the ten-year-risk of hernia recurrence was relatively high. Moreover, PROMs were negatively associated with perineal hernia repair. Conventional abdominoperineal resection was previously a frequent surgical procedure in patients undergoing rectal cancer surgery [14], but in recent years extralevator abdominoperineal excision (ELAPE) has become increasingly popular owing to reports of reduction in circumferential resection margin positivity [15], and ELAPE now accounts for 10-15% of operations for rectal cancer in Denmark [16]. However, the perineal defect following ELAPE is larger, and reported hernia rates (26%) are higher than with conventional abdominoperineal resection [17]. Due to this shift in the operative technique used for rectal cancer, more patients with perineal hernia are expected in the future.

The literature on surgical repair of post-operative perineal hernia is limited and predominantly linked to case reports or it comprises heterogeneous retrospective studies of dubious quality [3, 4, 10, 12, 18]. The incidence of perineal hernia is therefore uncertain. The two largest studies consisted of 245 and 1,776 patients with abdominoperineal resection (both single-centre studies), reporting an incidence of 11.8% and 0.62%, respectively (29 and 19 perineal hernia repairs) [3, 8]. The present study reports nationwide hernia repair rates and reports more than 2,000 cases of abdominoperineal resection. Furthermore, the post-operative clinical outcome after hernia repair in available previous studies focuses on recurrence rates, and no other symptoms are reported.

TABLE 1

The patients' perioperative and long-term characteristics in relation to the primary procedure and the hernia repair procedure (N = 18).

Gender, male/female, n	11/7
Age, yrs, median (range)	74 (57-91)
Preoperative CRT, n	10
<i>Primary surgical procedure, n</i>	
Conventional APR	17
Open	8
Laparoscopic	9
Proctocolectomy	1
Complications	2
<i>Surgical hernia repair, n</i>	
Mesh repair: Permacol/Bard Composix	16 (14/2)
Suture repair: Prolene	1
VRAM-flap	1
<i>PROMs, n</i>	
Moderate or severe perineal pain or heaviness	4
Pain or heaviness affecting household chores	4
Pain or heaviness preventing leaving the house	3
Poor perception on general health	4
Negative impact on sexual function	1

APR = abdominoperineal resection; CRT = chemo and/or radiation therapy; PROMs = patient-related outcome measures; VRAM = vertical rectus abdominis myocutaneous.

The perineal defect can be repaired using a primary suturing technique, muscle flaps or mesh reinforcement by abdominal, perineal, combined abdominoperineal or laparoscopic transabdominal approach [3, 4, 6, 8-11, 13]. Mesh reinforcement rather than simple suture repair is performed in the majority of patients owing to the potential of the mesh to reduce hernia recurrence compared with primary suturing [3-5, 8-12], especially if a non-absorbable mesh is used [8]. Thus, the authors found a significantly lower risk of recurrence after mesh re-enforcement than after suture repair. Despite the low number of patients, the authors suggested that mesh re-enforcement should be used routinely in perineal hernia repair (corresponding to the repair technique for ventral and groin hernias). In the literature, the risk of recurrence varies considerably, from 0% to 100% [3, 4, 6, 8, 10-12, 18].

However, the majority of these studies are small with a cohort comprising fewer than ten patients and with insufficient and short follow-up. In the two largest studies, counting 29 and 19 perineal hernia repairs, respectively, the recurrence rates were 5% and 16% [3, 8]. These studies, along with the present study reporting a recurrence rate of 22%, represent the largest published material on the subject. However, the literature remains limited which precludes any final conclusions on optimal repair technique.

The present study is the first to address PROMs after surgical repair of perineal hernia. However, conclusions are also hampered by the fact that patient numbers were small and preoperative complaints were not registered. Since chronic perineal pain and reduction accompanied by loss of quality of life are reported in one fifth of patients after conventional abdominoperineal resection [19, 20] it is problematic to distinguish symptoms from perineal hernia repair.

There are several limitations to the present study. These mainly include the retrospective nature of the study design and the fact that we registered the number of patients with a surgical repair for a perineal hernia and not patients treated conservatively, which prevents final conclusions on the "true" incidence of perineal hernia following conventional rectal cancer resection. Finally, PROMs and clinical outcomes were based on very low numbers of patients, and the results from this analysis can therefore be no more than hypothesis-generating.

For the future, well-designed quality trials with long-term follow-up and well-defined pre- and post-operative outcome variables are warranted. The main outcomes should be risk of clinical/surgical recurrence and PROMs in relation to the various repair techniques used. Finally, watchful waiting studies (repair versus conservative treatment) may be important to establish an evidence-based indication for treatment.



Post-operative perineal hernia, posterior view.

In conclusion, the incidence of perineal hernia after conventional rectal cancer surgery was below 1%. The overall benefits of perineal hernia repair remain uncertain. The incidence of perineal hernia repair is low, and therefore every surgeon only performs only a very limited number of operations. Furthermore, the recurrence rate is probably high, and the surgical technique used varies. All of these factors indicate that centralisation of the surgical treatment may be warranted.

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ACCEPTED: 11 April 2017

CONFLICTS OF INTEREST: Disclosure forms provided by the authors are available with the full text of this article at www.danmedj.dk

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