Assessment of results of suture rectopexy procedure for rectal intussusception associated with rectocele

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Abstract

Introduction: On the basis of stapled transanal rectal resection procedure (STARR surgery), Nguyen Trung Vinh introduced Suture Rectopexy procedure for Rectal Intussusception associated with Rectocele. This study was performed to evaluate the effectiveness and complications post-surgery of this method.

Patients and methods: 54 female patients with Obstructed Defecation Syndrome (ODS) underwent Suture Rectopexy for Rectal Intussusception associated with Rectocele from 2017 to 2020 at Trieu An Hospital. These patients were followed up and evaluated up to 18 months after surgery.

Results: Suture Rectopexy procedure to treat Rectal Intussusception associated with Rectocele was performed on 54 patients. Syndrome enhancement according to Guidelines-ROME IV standard post surgery 6 months was 94,4%, post surgery 12 months was 89,1%, post surgery 18 months was 87,5%. ODS score post surgery 6 months was 6,78 ± 3.08, 7,33 ± 3,54 post 12 months and 8,13 ± 3,95 post 18 months, the improvement was statiscally significant compares to pre surgery which was 14,6 ± 1,78. On post surgery fecal impaction MRI, Rectal Intussusception improved above 83,7% and Rectocele improved above 78% patients were evaluated. There were no severe complications. 77,7% patients after 6 months, 76% patients after 12 months and 77,5% patients after 18 months were satisfied with the results.

Conclusion: Suture Rectopexy is highly efficient and safe in treating Intussusception combined with Rectocele disease.

Keywords: Suture Rectopexy, rectal intussusception, rectocele, constipation, obstructed defecation syndrome (ODS).

Introduction

In the world, there have been surgical methods to treat chronical constipation caused by Rectal Intussusception associated with Rectocele at the same time as Delorme surgery, suturally fold rectum mucosal by Shafik, stapled transanal rectal resection (STARR), modified Bresler surgery, modified Block surgery combined with rectopexy and mucosal fixation. However, the surgical result of these methods was not so positive, especially long-term result was gradually worsened, the equipment was too expensive [1].

Based on technique of stapled transanal rectal resection procedure (STARR surgery), Nguyen Trung Vinh introduced Suture Rectopexy procedure (2005) to treat Rectal Intussusception combined with Rectocele with surgical principles: (1) Suturally fold the mucosa and anterior wall of rectum to cover anterior wall rectum prolapsed; (2) Suturally fold posterior mucosal rectum to remove musoid in posterior wall rectum.

The aim of this study was to evaluate the complications and effectiveness of Suture Rectopexy procedure in treatment of Rectal Intussussception associated with Rectocele.

Materials and method

Subjects: Studying subjects were female patients diagnosed with Rectal Intussussception associated with Rectocele who had constipation (according to Rome IV Diagnostic Criteria Guidelines) and were treated using Suture Rectopexy procedure at Trieu An Hospital HCMC from 06/2017 – 12/2020.

Designing research: Prospective case series study, clinical intervention without control group (placebo group)

Subject selection: Female patient, adult, had or had not given birth (Cesarean delivery or Vaginal delivery) admitted to hospital due to ODS caused by Rectal Intussussception (findings from defecography-MRI or during surgery) associated with Rectocele.

Selection criteria and surgical indication: Criteria were selected through checkup in which patients was found to have ODS based on ROME IV criteria [2], the severity of ODS was assessed based on evaluated according to ODS scale [3]; clinical examination found Rectal Intussussception associated with Rectocele; defecography MRI found patient has detected moderate anterior rectocele (grade II according to Yang) + Rectal Intussussception [4]; during surgery grade I Rectal Intussussception was found according to Longo + Rectocele; patient was treated conservationhad preservation treatment failed.

Exclusion criteria: including functional constipation, constipation caused by physical damage (pelvis floor), IBS, colon atony; perineal infection, rectovaginal fistula, anal fistula; perianal abscess; anal stenosis unable to insert anal dilator (CAD33); underwent operation to insert composite graft into vaginal and rectum; heart failure, liver failure, acute or chronic renal failure, coagulopathyl; patient had cancer or pelvic tumor.

Suture Rectopexy steps in treating Rectal Intussussception associated with Rectocele

Step 1: Identify rectocele apex and intussussception

Lubricate anal dilatation and anal sphincter, gently dilate the anal canal to stretch anal sphincter, insert anal retractor and sutured 2 triangle 1.0 silk stitches to attach the retractor to the anal skin, use Kelly to clamp a circular gauze and deeply insert into the rectum then pull out the rectal mucosal mass to evaluate prolapse in the rectum. Insert the index finger into the vagina to determine rectocele apex (able to see white fibers of upper and lower margins of the hernia sac). Use Babcock to clip sachet apex.

Step 2: Suturally fold the entire anterior wall of rectum to repair prolapsed.

Suture and fold the entire anterior wall of rectum (including the muscle layer and rectal mucosa) 3 X-shaped stitches along the longitudinal axis of rectum with vicryle 2.0 thread at 10h-12h-2h positions. Then continue to suture similar stitches to fill anterior prolapsed rectum.

Step 3: Suturally fold posterior mucosal rectum

Suture and fold posterior mucosal rectum to repair Intussussception with X-shaped stitches along the longitudinal axis of rectum with vicryl 3.0 or 2.0 thread. Removing the suture fixation and retractor. End of the surgery.

Postoperative follow-up

Monitoring early-stage complications, including bleeding, urinary retention, pain, surgical site infection. It starts after being discharged, which included: re-examination on the 7th day, 1st month, 3rd month, 6th month, 12th month and 18th

month postoperative. During the follow-up, patient was examined the rectum with a finger, evaluate constipation condition based on ROME IV criteria aand evaluate ODS according to ODS scale, perform defecography-MRI. This examination aims to detect late complications such as anorectal stenosis and rectal fistula, as well as assess treatment result based on the improvement of symtomps. Patients satisfaction level was evaluated at the follow-up 6 months, 12 months, 18 months by using satisfaction scale.

Data gathering

Data collection tools: Data was recorded according to data collection template and saved to computer with Excel 2007 software.

Data collection process: Collect data using template table. Data of monitoring after discharged was collected directly from patients with template form: contact to invite patient for follow-up or exchange information through phone.

Variables

Age, gender, obstetric history (PARA, Cesarean delivery, Vaginal delivery, hysterectomy), surgical history (previous surgeries, especially pelvic surgeries); factors related to constipation symptoms including the presence of constipation according to ROME IV, period of constipation (number of months), ODS score; the presence of Rectocele and Rectal Intussussception (determine based on the MRI defecography or during surgery), defecation reflexes, anorectal manometry ballon

Early and late complications were observed carefully in which early complications were bleeding (in and post surgery which included bleeding from incision require blood transfusion or surgical intervention), urinary retension (not able to urinate post surgery requires catheterization urinary is considered as yes, normal urination is considered as no), surgical site incision infection. On the other hand, late complications included rectal anal stenosis (not able to insert or able to insert fingers in a difficult way while performing rectal examination is considered as yes, in the opposite is considered as no), vaginal rectal fistula (with vaginal rectal fistula is considered as yes), and others.

The variables related to surgical result included: constipation symptoms according to ROME IV criteria after 6 months, 12 months and 18 months; ODS score after 6, 12 and 18 months; Rectal Intussussception and/or Rectocele on MRI postoperation; patients satisfaction during the follow-up 6 months, 12 months and 18 months based on 4 levels of statisfaction scale/

Processing data and statistically analyze

Data was processed and analyzed with SPSS 16.0 software. The quantitative variables were calculated according to the average and standard deviation. The qualitative variables were calculated in proportion. Chi squared test was used to compare the frequencies. T test with paired samples was used to compare the quantitative variables before and after surgery on a same patient. The differences were significant when p value < 0,05.

Ethic aspect in research

The study proposal was approved by Ethical Committee of HCMC Pharmaceutical University Hospital. All the patients in researching were carefully explained and agreed to sign the consent.

Results

During the period from June/2017 to Dec/2020, Trieu An Hospital had 54 female patients received constipation treatment caused by Rectal Intussussception associated with Rectocele by Suture Rectopexy. The average age is 49 (27-77). The group of patients that had the longest of constipation was over 36 months (>50%). Average of natural delivery was two times.

On MRI pre-surgery, the average size of rectocele was 25 mm (20mm – 40mm). Intussussception found on MRI was 26 cases (48,1%). 100% of patients had defecation reflexes before surgery. 79,6% of patients without anorectal manometry ballon

The average operation time was 18,24 mins (15-20). The average hospitalized length stay was 1,65 (1-2) day. Return to normal activity postoperation was 4,6 (3-6) days.

There were 10 (18,5%) patients with urinary retention postoperation which all occured on the first day after surgery. Patients were managed by urinary catheterization for a day until urinary retention was fixed. 2 (3,7%) cases had anal stenosis postoperation, but were treated successfully afterwards. Complications of rectal vaginal leakage, dyspareunia, bleeding at incision site, pelvic hematoma, pelvic infection caused by perforation, urinary and fecal incontinence, bleeding post surgery, incision dehiscence, flatulence incontinence, constipation were not seen in this series.

Constipation symptoms improvement based on ROME IV

The rate of patients improved constipation symptoms according to ROME IV criteria postoperation was: 6 months improved 94,4% (N=54); 12 months improved 89,1% (N=46); 18 months improved 87,5% (N=40).

Symptoms improved according to ODS scale

Table 1. ODS score pre and post surgery

	Pre surgery	Post surgery 6 months	Post surgery 12 months	Post surgery 18 months
<7	0	40 (74,1%)	34 (73,91%)	27 (67,5%)
7-9	0	8 (14,8%)	6 (13,04%)	7 (17,5%)
>9	54	6 (11,1%)	6 (13,05%)	6 (15%)
Average score	14,69+1,78	6,78+3,08	7,33+3,54	8,13+3,95
P		<0.001	<0.001	<0.001

The average score of all the post-operative symptoms at 6 months, 12 months, 18 months was improved significantly compared to preoperation (P <0.001)

Image of defecography MRI

Totally, 43 patients had MRI defocography after surgery. During preoperation, there had 43/43 (100%) cases of Intussussception with size >2cm, whereas 36/43 (83,7%) patients had Intussussception <2cm. Preoperation there had 19/43 (44,2%) had Rectocele on MRI. Postoperation had 4/43 (9,3%) patients still have Rectocele on MRI.

Patients satisfaction levels

Table 2. Patients satisfaction levels

Satisfaction levels	Superb	Good	Average	Poor
	No. of patients	No. of patients	No. of patients	No. of patients
Post surgery 6 months (N=54)	32 (59,2%)	10 (18,5%)	5 (9,2%)	7 (12,9%)
Post surgery 12 months (N=46)	25 (54,3%)	10 (21,7%)	6 (13%)	5 (10,8%)
Post surgery 18 month (N=40)	25 (62,5%)	6 (15%)	3 (7,5%)	6 (15%)

High satisfaction level after 18 months was 77,5%. The satisfaction level overall was consistent at 6 months, 12 months and 18 months, respectively. However, there were still 15% of patients who were dissatisfied with the post-operative outcomes.

Discussions

In our series, the average pre-operative ODS score was 14,69 (11-18). Our series was quite similar with study of Guttadauro (14,1) and Hasan (14,2) [5],[6]. Comparing to the domestic researches from author Nguyen Thanh Luc (10,9) and author Tran Dinh Cuong (10,4), our average score was higher, which posited our patient group had more severe clinical symptoms [7],[8].

The average size of rectocele on MRI defecography was 25,76 mm (20mm – 40mm). Therefore, all the cases in our series were classified as grade II rectoceles according to Yang. Although the size of rectocele in our study which was smaller than other researches conducted by Nguyen Thanh Luc (33mm), Tran Dinh Cuong (36mm) and Renzi

(36mm), the constipation symptoms evaluated according to ODS scale [7][8][9]in our research were more severe. Many researches have shown rectocele size is not always proportional to the severity of constipation symptoms. Of note, our research was conducted on patients with obstructed defecation caused by Intussussception combined with Rectocele but not by Rectocele individually. In our series, we only selected the cases of medium size rectocele (≤ 4cm) and had Rectal Intussussception.

On MRI pre surgery, 26 cases (48,1%) were found with Intussussception. However, 100% of patients were found with Rectal Intussussception during surgery. All these 54 patients were classified as grade I Intussussception (according to Longo catergory), however, none of grade II cases was not included in this study. According to Nguyen Trung Vinh, MRI was able to detect about 35 – 70% of Intussussception and not all of Intussussception cases were detected on defecography MRI. A research in evaluation of the sensitivity and specificity of defecography MRI on Rectal Intussussception is needed.

In our series, the rate of patients who had urinary retention post operation was 18.5%. All of these cases occurred on the first day after surgery. Patients were treated by urinary catheterization for one day until their urinary retention could be fixed. Several domestic studies also reported the rate of post-operative urinary retention which was relatively high, for instance, in Tran Dinh Cuong report, the rate was 61,9% while in research of Nguyen Thanh Luc was 56,4% [7][8]. To explain why these studies had higher rate than our study, it might be because the length of rectal prolapse in our study was relatively shorter than 2 other studies in which we only chose the patients that had grade I intussusception accompanied by grade II rectocele according to Yang. However, global evidences reported the significantly lower rate of this phenomena in which 8% rate in Boccasanta report, 7,8% in Guttadauro report, and 7% in Pagano raport, respectively [5][10][11]. The difference could be explained because these research teams had more surgeons that were experienced in STARR, thus the rate of urinary retention was comparatively lower.

Our study reported 3,7% (2/54) cases with anal stenosis which was treated smoothly afterwards. On the other hand, Deng determined this complication rate was up to 7,5% with STARR. Our surgical method is Suture rectopexy, whereas STARR technique consists in a full thickness resection of the anterior and posterior rectal wall firing two circular staplers. Stapler pins are the foreign objects that might cause inflammation, fibrosis leading to muscle cramp. Therefore, STARR easily results in anal stenosis.

Several complications such as recto-vaginal fistula, chronic pain after surgery, dyspareunia, pain at incision side, pelvic hematoma, pelvic sepsis due to sub-peritoneal perforation, urinary incontinence, fecal urgency, early rectal bleeding, anastomotic dehiscence, constipation after surgery did not occur in our series. Thus, in term of surgical treatment for intussusception combined with rectocele, our method relatively resulted in less complications and relapse than other counterparts (STARR, modified Bresler technique, modified Block technique combining with Mucopexy-Recto Anal Lifting) because we didnt need to perform rectal wall resection as well as we could manage all the procedure and didnt leave any foreign body at incision site.

Follow up outcomes showed constipation occurring 6 months, 12 months, and 18 months after surgery improved 94,4%,89,1%, and 87,5% respectively. The rate of post-operative constipation following Rome IV Diagnostic Criteria Guidelines significantly improved rather than pre-operative outcome ($P < 0,001$). When compared to other authors, the rate of patients who could improve post-operative constipation following Rome IV Diagnostic Criteria Guidelines in our series was relatively higher than Nguyen

Thanh Luc (64,4%), Tran Dinh Cuong (60,6%), Guttadauro (80%), but lower than Boccasanta (90%) and Hasan (90%), it might be because we chose the patients that had smaller size of ventral rectocele than other authors studies (grade II according to Yang classification) [5][6][7][8] [10]. STARR technique (in Nguyen Thanh Luc and Tran Dinh Cuong studies) has just newly been applied in Vietnam, whereas this technique has been applied years ago (in Boccasanta, Hasan and Guattadauro studies), therefore the outcomes were relatively better.

Average ODS score in our series slightly increased overtime. In 6 month observation group, average score was only 6,7, whereas 12 month group and 18 month group increased up to 7,3 , 8,13, consecutively. Guattadauro also detected average ODS score rised from 3,1 at 12 months to 4,3 at 36 months and 6,4 at 60 months [5]. Herein, Guattadauro also reported the degradation of anus and rectum function occurred in 10-30% of cases in the following years, the decrease of ODS score was observed although there had no evidence that showed the recurrence of rectocele or intussusception. On the contrary, in Pagano study using the modified Block technique combining with Mucopexy-Recto Anal Lifting, the average ODS score improved overtime [11].For instance, the average score at 6 months and 12 months were 5,12 and 4,07, respectively. Regarding the principle of surgical procedure, our method corresponded to the modified Block technique combining with Mucopexy-Recto Anal Lifting which was used by Pagano. However, for the anterior rectal wall, we sutured both mucosal and muscle layers, thus the rate of rectocele reccurence was relatively lower than Pagano who only sutured the mucosal layer.

Pre-operative rectocele size in our series was relatively smaller than other studies including domestic and international counterparts. We also chose the cases that had grade II size of rectocele following Yang which was suitable to our surgery principle. The improvement in rectocele size in our series was comparable to Nguyen Thanh Luc study but lower than Tran Dinh Cuong [7][8]. MRI evaluation in our series showed ameliorated and recovered cases after surgery were 83,7% (R < 20mm). The rate of post-operative recovered cases (without rectocele) in Tran Dinh Cuong study was 41,2%, while ameliorated was 44% [10]. Pagano research showed no reccurence of rectocele after 12 months. On the other hand, Guttadauro reported the similar outcome after 5 years [11].

48,10% (26/54) patients presented with pre-operative intussusception on MRI imaging, whereas 100% patients had intussusception diagnosed during surgery. 43 patients were indicated for MRI evaluation after surgery and the result showed 78,95% (15/19) cases improved post-operative intussusception. In our perspective, MRI evaluation for pre and post-operative intussusception was correct to a certain extent as it only detected 35-70% cases of intussusception. Moreover, Intussusception could only be found 100% during operation, in accordance with Longo.

Patients satisfaction in our study group was reported to decrease over time. The percentage of unsatisfied patients post surgery 6 months was 12,96%, 12 months was 10,87%, 18 months was 15,0%. Comparing to other authors, our results were comparable, for instance, Hasan recorded after 12 months monitoring, there was 10% patients had poor satisfaction [6], while Pagano recorded after 6 months monitoring there was 7,1% patients with poor satisfaction level [11]. Especially in reseaching group by Deng recorded the improvement in patients satisfaction level over time.

Advantages of suture rectopexy procedure:

For posterior rectum wall, we sutured both mucosal and muscular layers. Therefore, rectal prolapse was harder to relapse than modified Block technique combining with Mucopexy-Recto Anal Lifting (MuRAL) when it only contained suturing mucosal and sub-mucosal layer.

As it did not depend on machine so we did not depend on the vertical or horizontal size of rectocele like STARR surgery and modified Bresler surgery.

After suturing to treat Rectal Intussusception and Rectocele, principally it is similar to modified Block technique combining with Mucopexy-Recto Anal Lifting (MuRAL), the tissues will be fibrous (proven through post surgery endoscopic test), the anterior wall of rectal will be more stable, mucosa of rectum posterior wall will be hung and fixed.

We only sutured without rectal wall resection → the percentage of post operative stenosis was lower, even if it was narrow, it would be relatively easier to manage than using machine and also could avoid other complications due to rectal wall resection.

The posterior rectal wall only had prolapse, the muscular layer was not damaged → it was reasonable for us to only intervene the mucosa.

In suture rectopexy procedure, by insert finger in vagina, we could see the white fibers of upper and lower edges of Intussussception. Therefore, rectocele could be treated following the exact pathological position. At the same time, suture rectopexy was able to remove completely Rectocele mass without limitation in size. As the result, Intussussception will be hard to relapse, along with the relapsing of Rectocele. Hence, long term treatment result will be better.

Simple Suture rectopexy, less invasion, does not require a long time of training.

No device, no rectal wall resection (short hospitalization period) → low cost.

Disadvantages of suture rectopexy procedure:

Similar to other STARR surgeries, modified Bresler surgery, modified Block surgery combining with Mucopexy-Recto Anal Lifting (MuRAL), our Suture rectopexy procedure only interfered with the posterior colon wall, but not with the rectal vaginal (septum), therefore, it was not indicated for large-size rectum prolapses (R>4cm) because the recurrence rate might be as high as STARR surgery.

Conclusions

Suture rectopexy procedure to treat Rectal Intussusception associated with Rectocele is an effective surgical treatment for constipation caused by ODS, while can minimize complications and result in high post-operative satisfactory outcome. Although effectiveness and patients satisfaction level might gradually decrease over time, it is not significant.

Conflict of interest: The authors declare that they have no conflict of interest.

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