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## Management of anal stricture at King Chulalongkorn Memorial Hospital (KCMH): a 5-year experience

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- Objective** : *To review the etiology, severity and surgical options in patients with anal stricture (AS), and to evaluate the association between the surgical treatment, etiology and the severity of AS.*
- Setting** : *Inpatient ward, Colorectal Division, Department of Surgery, Faculty of Medicine, Chulalongkorn University*
- Subjects** : *Patients with anal stricture admitted at KCMH.*
- Design** : *Retrospective and descriptive study.*
- Materials and methods** : *Inpatient records of AS at KCMH from 1997 to 2002 were reviewed. The etiology was evaluated as well as the severity and the level of AS classified on the basis of physical examination findings. Treatment modalities were also reviewed and evaluated.*
- Results** : *There were 24 patients (17 male; 7 female) between 24 and 77 years of age (mean age: 47 years old). There were 7 hemorrhoids patients (29.2 %) who had AS from unknown chemical irritant applied by nonmedical personnel; 7 other patients (29.2 %) developed AS after hemorrhoidectomy. The other causes were post trauma, post perianal operation, post radiation and post-*

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*subtotal hysterectomy. Seven patients had severe AS. Moderate and mild degree of AS were seen in 14 and 3 patients, respectively. Of the 7 cases with severe AS, 5 were hemorrhoid patients with application of unknown chemical irritant and 2 post traumatic. These patients had more complicated surgical correction than patients with mild and moderate AS.*

**Conclusion** : *The common etiology of AS in Thailand is different from that described in western literatures, i.e. the common cause is application of unknown chemical irritant to hemorrhoids. The selection of the appropriate surgical options depends on the etiology and the severity of AS.*

**Keywords** : *Anal stricture, Etiology, Severity, Surgical options.*

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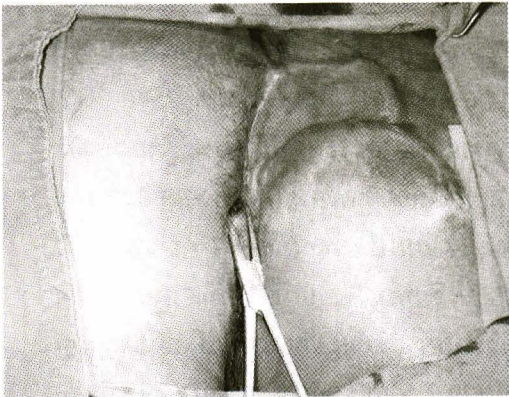
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ในโรงพยาบาลจุฬาลงกรณ์: ประสบการณ์การรักษา 5 ปี. จุฬาลงกรณ์เวชสาร 2546 ส.ค;  
47(8): 461 - 9

- วัตถุประสงค์** : เพื่อศึกษาถึงสาเหตุ, ตำแหน่งและระดับความรุนแรงของภาวะทวารหนักตีบแคบ รวมถึงการเลือกวิธีการรักษาในแต่ละประเภท
- สถานที่ทำการศึกษา** : หอผู้ป่วย หน่วยศัลยศาสตร์ลำไส้ใหญ่และทวารหนัก ภาควิชาศัลยศาสตร์โรงพยาบาลจุฬาลงกรณ์
- ผู้ป่วยที่ได้ทำการศึกษา** : ผู้ป่วยที่มีภาวะทวารหนักตีบแคบที่เข้ารับการรักษาแบบผู้ป่วยในที่โรงพยาบาลจุฬาลงกรณ์
- รูปแบบการวิจารณ์วิธีการศึกษา** : การศึกษาเชิงพรรณนา  
: รายงานนี้เป็นการศึกษาย้อนหลังจากเวชระเบียนผู้ป่วยที่เข้ารับการรักษาแบบผู้ป่วยในที่โรงพยาบาลจุฬาลงกรณ์ ในช่วงปี พ.ศ. 2540-2545 ผู้ป่วยจะได้รับการประเมินถึงตำแหน่งและระดับความรุนแรงของภาวะทวารหนักตีบแคบ รวมถึงศึกษาวิธีเลือกการรักษาในผู้ป่วยแต่ละราย
- ผลการศึกษา** : จากข้อมูลพบว่ามีผู้ป่วยทั้งสิ้น 24 คน เป็นเพศชาย 17 คน เพศหญิง 7 คน มีอายุเฉลี่ย 47 ปี (24-77 ปี) ซึ่งพบว่า เป็นผู้ป่วยที่มีสาเหตุมาจากการรักษาริดสีดวงทวารผิดวิธีด้วยการฉีดยาหรือทายากระตุ้นเยื่อเยื่อจากผู้ที่ไม่ใช่แพทย์เป็นจำนวน 7 คน (29.2 %) และอีก 7 คน เกิดภาวะนี้หลังจากผ่าตัดริดสีดวงทวาร สำหรับสาเหตุอื่น ๆ ได้แก่การประสบอุบัติเหตุ การฉายรังสีรักษา และการผ่าตัดมดลูก เมื่อพิจารณาถึงระดับความรุนแรงของภาวะทวารหนักตีบแคบ พบว่ามีผู้ป่วย 7 คนที่อยู่ในระดับรุนแรงมาก ซึ่งพบว่าเป็นผู้ป่วยที่รักษาริดสีดวงทวารผิดวิธีจำนวน 5 คน และประสบอุบัติเหตุ 2 คน โดยผู้ป่วยเหล่านี้ต้องเข้ารับการผ่าตัดที่ซับซ้อนมากกว่าผู้ป่วยที่มีภาวะทวารหนักตีบแคบปานกลางและตีบแคบน้อยซึ่งมีจำนวน 14 คนและ 3 คนตามลำดับ
- วิจารณ์และสรุป** : จากข้อมูลพบว่าสาเหตุของภาวะทวารตีบแคบส่วนหนึ่งเกิดจากการรักษาตนเองอย่างผิดวิธี ซึ่งแตกต่างกับข้อมูลของชาติตะวันตกที่พบว่าส่วนใหญ่เป็นผู้ป่วยที่เกิดหลังจากผ่าตัดริดสีดวงทวาร และจากการศึกษาพบว่า การเลือกวิธีการรักษาขึ้นกับสาเหตุและระดับความรุนแรงของภาวะทวารหนักตีบแคบ

**คำสำคัญ** : ภาวะทวารหนักตีบแคบ, สาเหตุ, ระดับความรุนแรง, การผ่าตัด

Anal stricture (AS) is defined as the loss of natural elasticity of the anal opening, which has then become abnormally tight and fibrous. It is a very disabling condition worsened by the patient's embarrassment, yet it is uncommon. The vast majority of the cases of AS are secondary to hemorrhoidectomy due to excessive removal of the healthy anoderm. Local trauma, infection or inflammatory disease may also play important roles in the pathogenesis of the condition <sup>(1)</sup> (Figure 1).



**Figure 1.** Post traumatic anal stenosis

The treatment modality of which ranges from conservative to complicated surgical operation, depends mainly on the etiology and the level of the AS.

The aim of this study is to review the etiology, severity and surgical options in patients with AS and to evaluate the association between the surgical treatment, etiology and severity of AS.

**Materials and methods**

Inpatient records of AS at KCMH from 1997 to 2002 were reviewed. There were 24 patients (17 male, 7 female) between the age of 24 and 77 (mean age: 47 years old). The etiology was evaluated and AS classified based upon the severity of the stricture and the level of involvement in the anal canal (Table 1). <sup>(2)</sup>

The treatment modality for each patient depends on the etiology, severity and level of AS. <sup>(2,3)</sup> When physical examination results in extreme

**Table 1.** Classification of Anal Stenosis.

Classification based on severity	
Mild:	Tight anal canal can be examined by a well-lubricated index finger or a medium Hill-Ferguson retractor.
Moderate:	Forceful dilatation is required to insert either the index finger or a medium Hill-Ferguson retractor.
Severe:	Neither the little finger nor the small Hill-Ferguson retractor can be inserted unless a forceful dilatation is employed.
Classification based on level of stenosis	
Low:	Distal anal canal at least 0.5 cm below the dentate line
Mid:	0.5 cm. proximal to 0.5 cm distal to the dentate line
High:	Proximal to 0.5 cm above the dentate line

discomfort, examination under anesthesia may be warranted. Adequate examination with the use of anoscopy may help localize areas of scarring and delineate the extent of involvement of the anal canal. The extent of the involvement is a criterion in the selection of the appropriate therapeutic options.

Local operative therapy consists of one of these procedures: 1) anal dilatation with Hegar dilator; 2) opened or closed sphincterotomy<sup>(4)</sup>; 3) stricturoplasty; 4) varieties of advancement flaps<sup>(5-8)</sup> and transsacral rectoanoplasty.

Results were assessed either as improvement of the symptom or recurrence.

## Results

Twenty four patients with a diagnosis of AS were admitted to the hospital during the study period (Diagram 1). There were 7 hemorrhoid patients

(29.2 %) who had AS from application of unknown chemical irritant by nonmedical personnel (Figure 2). Regarding the post hemorrhoidectomy cases, all 7 patients had their first hemorrhoidectomy outside KCMH. Three patients were post traumatic AS, who developed the disease after multiple injuries involving pelvic and perineal regions. Diverting colostomy was performed in all patients. The other causes were, namely: post radiation, post perianal operation and post subtotal hysterectomy.

Patients in this study were placed in three groups: mild, moderate and severe degree of stricture (Table 2). Seven patients had severe AS. Moderate and mild degree AS were seen in 14 and 3 patients, respectively. Of the 7 with severe AS, 5 were hemorrhoid patients who had application of unknown chemical irritant and 2 were post-traumatic. Severity of stricture and results of various operative therapies

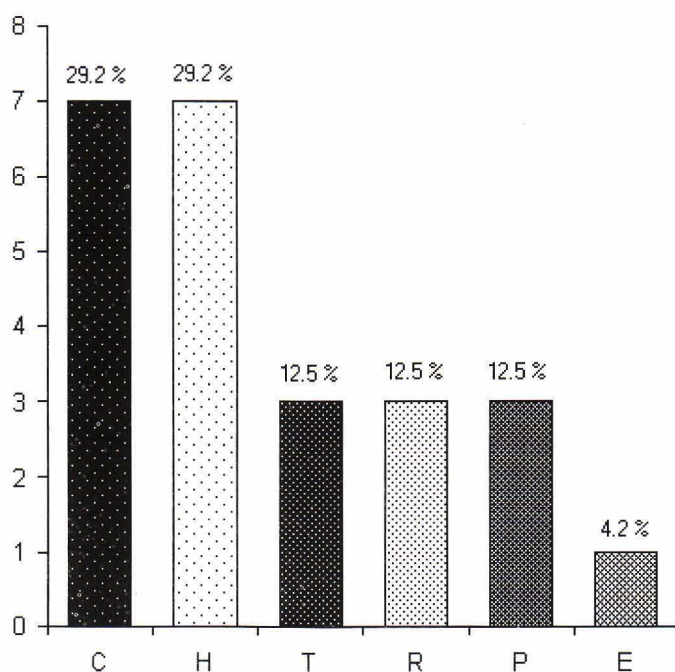


Diagram 1. Underlying disease.

C = Chemical burn

T = Trauma

P = Perianal operation

H = Hemorrhoidectomy

R = Radiation

E = Endometriosis





**Figure 2.** Application of unknown chemical irritant to hemorrhoids

are shown in Table 3. Severe stenotic case had more complicated surgical correction than patients with mild and moderate AS, such as advancement flap (Figure 3).

Regarding the level of AS, 11 and 10 patients were classified as low and mid levels of stricture, respectively (Table 4). There was no obvious association between the level of AS and surgical options.

Etiology of AS and the surgical options was given in Table 5. Six of seven patients with application of unknown chemical irritant to hemorrhoids had

**Table 2.** Severity and underlying disease.

Severity	Underlying disease						Total
	C	H	T	R	P	E	
mild	-	3	-	-	-	-	3
moderate	2	4	1	3	3	1	14
severe	5	-	2	-	-	-	7
Total	7	7	3	3	3	1	24

C = Chemical burn

H = Hemorrhoidectomy

T = Trauma

R = Radiation

P = Perianal operation

E = Endometriosis

**Table 3.** Severity and surgery.

Severity	Treatment modality					Total
	DIL <sup>*</sup>	SPH <sup>**</sup>	STR <sup>+</sup>	ADV <sup>++</sup>	TRP <sup>\$</sup>	
mild	1	2	-	-	-	3
moderate	2	3	4	5	-	14
severe	-	-	-	6	1	7
Total	3	5	4	11	1	24

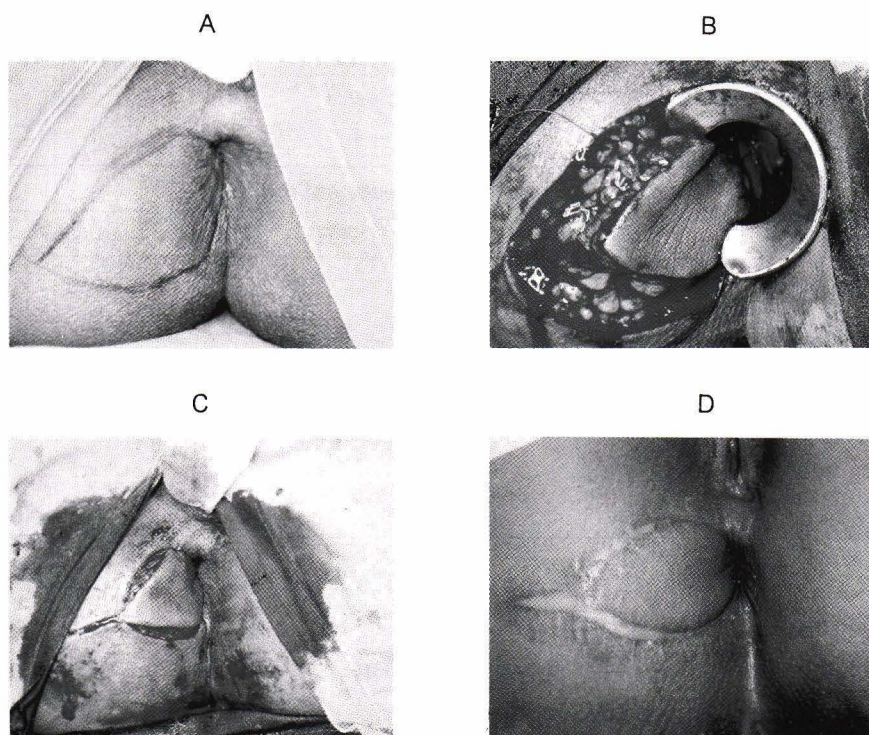
\*anal dilatation

\*\*sphincterotomy

+stricturoplasty

++advancement flap

\$ transacral rectoanoplasty with bilateral house flap



**Figure 3.** Advancement flap A) A house flap is designed.  
B-C) Flap is constructed and advanced upwardly.  
D) Flap is healing completely.

**Table 4.** Level and surgery.

Level	Treatment modality					Total
	DIL*	SPH**	STR*	ADV**	TRP\$	
low	2	3	2	4	-	11
middle	1	1	1	7	-	10
high	-	1	1	-	-	2
entire	-	-	-	-	1	1
Total	3	5	4	11	1	24

\*anal dilatation

\*\*sphincterotomy

+stricturoplasty

++advancement flap

\$ transsacral rectoanoplasty with bilateral house flap

complicated procedures: 5 had advancement flap; and 1 transsacral rectoanoplasty with bilateral house flaps because of the severe stricture along the entire anal canal (Figure 4). Only 2 of 7 post hemorrhoidectomy had advancement flap. Advancement flap was also required for 2 posttraumatic,

1 post drainage of perianal abscess and 1 post Delorme operation.

Improvement of the symptom was seen in every patient, except 1 elderly patient who had post radiation complication and refused another surgery after diverting colostomy.



**Table 5.** Underlying disease and surgery.

Underlying disease	Treatment modality					Total
	DIL <sup>*</sup>	SPH <sup>**</sup>	STR <sup>+</sup>	ADV <sup>**</sup>	TRP <sup>§</sup>	
chemical burn	-	1	-	5	1	7
hemorrhoidectomy	1	3	1	2	-	7
trauma	-	-	1	2	-	3
post radiation	2	-	1	-	-	3
perianal operation	-	-	1	2	-	3
endometriosis	-	1	-	-	-	1
Total	3	5	4	11	1	24

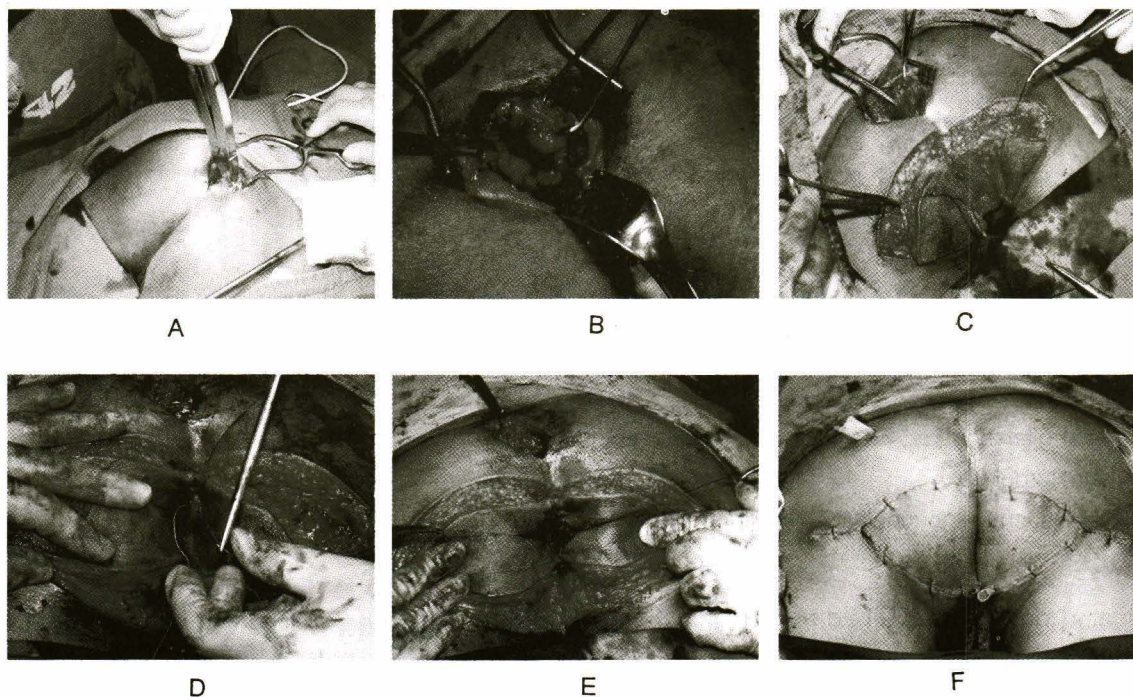
\*anal dilatation

\*\*sphincterotomy

+stricturoplasty

++advancement flap

§ transsacral rectoanoplasty with bilateral house flap



**Figure 4.** Transsacral rectoanoplasty with bilateral house flaps. A) Coccyx is removed. B) Lower rectum is mobilized, posteriorly. C) Bilateral house flaps are created. D-E) Flaps are sutured to the rectum. F) The procedure is completed.

## Discussion

According to the data, the common etiology of AS in Thailand was application of unknown chemical irritant to hemorrhoids (29.2 %) and post hemorrhoidectomy (29.2 %). This figure is different from what described in western literatures that their common cause was post hemorrhoidectomy (31-87 %).<sup>(1,2)</sup> In addition, the patients whose stricture was caused by application of unknown chemical irritant tended to be in severe AS group (5/7) and hence needed more complicated surgery.

The decision for the appropriate surgical options depends on the etiology and the severity of AS. The level of AS was not an absolute indication for the selection of the surgical option, when compared to other studies.<sup>(2,3)</sup> Most patients improved after their surgical correction.

Keys to success are the appropriateness of the surgical option for individual cases and the experience of the surgeons. However, the most important concept in AS is its prevention. Principles of anal surgical treatment, which must be observed, include meticulous dissection, avoidance of excessive removal of the anoderm at the time of anal operation of any type, especially hemorrhoidectomy.<sup>(9)</sup>

Health education and health promotion are also important. They can prevent misunderstanding which draws people to a wrong treatment.

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