Distribution of Buttock Shape and Relationship with Body Mass Index (BMI) in Thai Population: A Preliminary Result

Weerapat Suwanthanma MD*, Chakrapan Euanorasetr MD*

* Department of Surgery, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Background: Recognition of the different type of buttocks of patients aids in selection of anesthetic type and position for anorectal surgery. The ease in assessment and visualization of anal canal mainly depend on the type of buttock. Body mass index (BMI) has been used for classification of obesity. It can be used clinically to predict the type of buttocks.
Objective: Evaluate the distribution of buttocks shapes in Thai patients and assess the relationship between the specific type of buttocks and obesity patients.
Material and Method: We prospectively assessed 99 patients coming to anorectal clinic at Ramathibodi Hospital between September and December 2006.
Results: Forty-two men and 57 women with average age of 49.8 and 45.6 years, respectively, were included in this study. There were three types of buttocks. The most common type of buttocks in men was type A and in women, type C. In contrast, the most common buttock type in obesity group was Type B (57.1%).
Conclusion: Type A buttocks is the most common type in men and type C buttocks is the most common type in women. In addition, there is high incidence of type B buttocks in obesity groups of patients.

Keywords: Buttock shapes, Body mass index (BMI)

Buttocks shapes have been recognized as a factor in performing digital rectal examination and anorectal procedures. The difficulty in assessment and visualization of anal canal mainly depend on the type of buttocks. Several studies have addressed the significance of buttocks shapes but only for aesthetic purpose[1-4]. Only two published studies document the buttocks shapes and relationship with weight and aging[5,6]. A study by Nivatvongs et al[7] reported that Caucasian people's buttocks shapes were classified to three types. Furthermore, only type A and C would give better exposure for surgeons to perform a safe anorectal surgery under local anesthesia.

Our goal of this study is to evaluate the type of buttock in Thai patients and assess the relationship between specific type of buttock, sex, and body mass index (BMI).

Correspondence to:
Suwanthanma W, Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, 270 Rama 6 Road, Ratchathewi, Bangkok 10400, Thailand.
Phone & Fax: +66-2-2011527
E-mail: weerapat.suw@mahidol.ac.th

Material and Method

Between September and December 2006, we examined the buttocks shapes of our surgical patients coming with anorectal compliant at anorectal clinic, Ramathibodi Hospital. We collected data about hospital number, age, and sex. Measurement of body height and weight were performed before the patient went into examination room. After the examinations, the diagnosis and type of buttock were recorded. Body Mass Index (BMI) is calculated by dividing weight (in kilograms) by square height (in meters) as the formula:

Body Mass Index (BMI) = Weight (kilograms)/ Height (meter)$^{(2)}$

Normal BMI is defined as BMI 18.5 to 24.9. Overweight and obesity are defined as a BMI of 25 to 29.9 mg/m^2, and 30 mg/m^2 or greater, respectively[8].

The examination of buttocks type was performed in Sim's position. With the cheeks of the buttocks gently spread with examiners' hands. The appearance of the buttock and the location of anus were noted. We use the buttock classification that was previously described by Nivatvongs et al as three basic types[7].

Type A: The mounds of the buttock make a low and gentle slope with the anal verge (Fig. 1A). The anal verge is located halfway between the coccyx and the scrotum or vagina. On digital examination, the metacarpophalangeal joint of the index finger touches the anal verge with ease.

Type B: The mounds of the buttock are high and almost make a right angle with the anal verge (Fig. 1B). The anal verge is halfway between the coccyx and the scrotum or vagina. On digital examination, the metacarpophalangeal joint of barely reached the anal verge.

Type C: In most patients, the mounds of the buttock make a low and gentle slope with the anus, as in Type A (Fig. 1C). However, the anal verge is located more anteriorly than normally. It is difficult to insert the full length of the index finger due to the acute anorectal angle.

Results

During the study period, 99 patients were included in our study. Forty-two were men with age ranging from 22 to 79 years (average age 49.8 years). Fifty-seven were women with age ranging from 20 to 75 years (average age 45.6 years). The correlation between the shape of the buttocks and sex and body mass index are shown in Table 1 and 2. We classified the range of body mass index into three scales according to the definition of obesity.

In men, type A was the most common followed by type B and C where as in women, main proportion was type C followed by type A and B.

In obesity groups, there were high incidence of type B (57.1%) compare to overweight groups

(18.2%) and normal group (11.4%).

Discussion

From our study, type A buttock was the most common type in men, which is similar to that previously reported in Caucasian people by Nivatvongs et al[7]. However, in women, our result showed high incidence of type C buttocks compare to type A in Nivatvongs' report[7]. The explanation behind this discrepancy might be from difference in race or genetic etiology.

Selection of patients for local anesthesia and anorectal mucosectomy

It has been previously described by Nivatvongs et al[7] about the difficulty for performing digital rectal examination and anorectal surgery under local anesthesia in men that have high incidence of buttocks shape type B but the procedure will be easier in buttocks shape type A and C because of excellent exposure. For anorectal mucosectomy, the author recommended to proceed with prone Jack-knife position in patients with type B buttocks. In type A and C buttocks, both lithotomy and prone Jack-knife position make no difference in terms of exposure.

Selection of patients for abdominoperineal resection

Assessment of the upper edge of anorectal ring is achieved in buttock shape type A and C. In type C, the most prominent part of anorectal ring is located posteriorly due to the acute anorectal angle. In type B, there is difficulty to assess this height. This assessment will help in defining the distal margin of rectal cancer resection and determine whose patients with diagnosis of carcinoma of lower rectum are required for
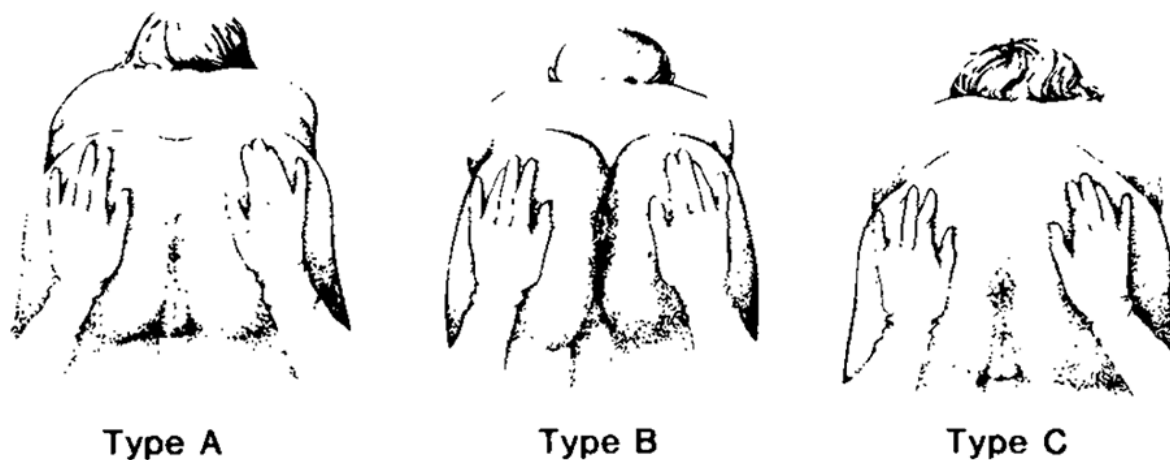

Fig. 1 The different shapes of the buttocks[7]. Reprint with permission from Nivatvongs et al.

Table 1. Type of buttocks in men and women

Type of buttocks	Nivatvongs et al		Present study	
	Male (n = 118)	Female (n = 107)	Male (n = 42)	Female (n = 57)
Type A (%)	58	70	52.4	21.1
Type B (%)	36	10	26.2	8.8
Type C (%)	6	20	21.4	70

Table 2. Type of buttock and BMI

Type of buttock	BMI 18.5 to 24.9			BMI 25.0 to 29.9			BMI >30			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Type A (n = 34)	16	9	25	6	3	9	-	-	-	34
Type B (n = 16)	5	3	8	3	1	4	3	1	4	16
Type C (n = 49)	8	29	37	1	8	9	-	3	3	49
Total (n = 99)	29	41	70	10	12	22	3	4	7	99

Male (n = 42), Female (n = 57), Total (n = 99)

abdominoperineal resection. Using rigid sigmoidoscope to determine the exact location of tumor will help in decision of surgeon regarding whether sphincter-saving operation can be performed.

Selection the technique and anoscope for rubber band ligation of hemorrhoid

In type C, clinicians must straighten the anal canal and reduce anorectal angle to aid in placing RBL, especially for right posterolateral position, which usually hide behind this angle. In type C, the most prominent is right anterolateral position, which is the easiest one for banding. For the buttocks shape type B, longer anoscope is usually required to facilitate the procedure. However, rubber band ligation can be accomplished with excellent view of all three hemorrhoid positions in buttocks shape type A.

Conclusion

Our study again addressed the benefit and clinical applications of buttocks shapes classification. Of the 99 patients examined in our study, type A buttock is the most common type in men and type C buttock is the most common type in women. In addition, there was high incidence of type B buttock in obesity group of patients, but we cannot demonstrate the statistical significance of this relationship due to the small number of patients. Large prospective study is required to demonstrate this relationship.

What is already known on this topic?

The buttock shapes were classified by their anatomy into three types. Each type affected the ease in performing anorectal surgery under local anesthesia and performing digital rectal examination.

What this study adds?

This is the first study of the buttock shapes in Thai population. It demonstrated the same result as the previous study of Nivatvongs et al. In addition, this study showed the predilection of buttock shape type B in obesity population.

Potential conflicts of interest

None.

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การกระจายตัวของลักษณะของก้นและความสัมพันธ์กับดัชนีมวลกายในประชากรไทย: รายงานเบื้องต้น

วีรพัฒน์ สุวรรณธรรมา, จักรพันธ์ เอื้อนรเศรษฐ์

ภูมิหลัง: การทราบประเภทของก้นแบบต่างๆ มีส่วนช่วยในการเลือกผู้ป่วยในการให้ยาระงับความรู้สึกการจัดท่าเพื่อผ่าตัดบริเวณก้น ความยากง่าย ในการตรวจประเมินและการมองเห็นของบริเวณทวารหนักขึ้นอยู่กับประเภทต่างๆ ของก้น ดัชนีมวลกายถูกใช้เพื่อแบ่งประเภทของโรคอ้วน มันอาจ ถูกใช้ทางคลินิกเพื่อทำนายลักษณะของก้นแบบต่างๆ

วัตถุประสงค์: เพื่อประเมินการกระจายตัวของก้นประเภทต่างๆ ในประชากรไทย และประเมินความสัมพันธ์ระหว่างประเภทของก้นชนิด B กับผู้ป่วยโรคอ้วน

วัสดุและวิธีการ: ทำการศึกษาโดยเก็บข้อมูลไปข้างหน้าโดยรวบรวมผู้ป่วยจำนวน 99 ราย ที่มาตรวจที่คลินิกลำไส้ใหญ่และทวารหนักของโรงพยาบาล รามาธิบดีจากเดือนกันยายน ถึง เดือนธันวาคม พ.ศ. 2549

ผลการศึกษา: มีผู้ป่วยชาย 42 ราย ผู้ป่วยหญิง 57 รายโดยมีอายุเฉลี่ย 49.8 ปี และ 45.6 ปีตามลำดับ โดยสรุปพบว่ามีประเภทของก้น 3 แบบ แบบที่พบมากที่สุดในผู้ชายคือแบบ A และในผู้หญิงคือแบบ C และพบว่ามีอุบัติการณ์ของก้นแบบ B สูงในผู้ป่วยโรคอ้วน (57.1%)

สรุป: รายงานของผู้นิพนธ์ได้ย้ำถึงความสำคัญของประเภทก้นแบบต่างๆ และการประยุกต์ใช้ประโยชน์ในทางคลินิก พบว่าแบบ A และแบบ C เป็นก้นที่แพทย์สามารถมองเห็นได้ชัดเจนสำหรับการให้ยาระงับความรู้สึกเฉพาะที่ การประเมินขอบบนของ anorectal ring และการมองเห็น ภายในทวารหนักเพื่อทำการรักษาแบบรัดยางหัวริดสีดวงทวารหนัก สำหรับก้นแบบ B การจัดท่าแบบนอนคว่ำชนิด Jack-knife จะช่วยให้การมองเห็นดีขึ้น แต่จะประเมินความสูงของ anorectal ring ได้จำกัดการใช้กล้องส่องทวารหนักที่มีความยาวเพิ่มขึ้น อาจช่วยในการรักษาแบบรัดยาง หัวริดสีดวง ทวารหนักได้ ก้นแบบ B พบได้ มากกว่าในผู้ป่วยที่อ้วน