

# Clitoral Size in Normal Women

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**Objective:** We sought to determine clitoral size in normal women and the possible effect of age, height, weight, parity, and oral contraceptive (OC) use.

**Methods:** Prospective measurement was made of clitoral dimensions in 200 consecutive normal women at routine gynecologic examination in an office setting.

**Results:** The mean ( $\pm$  standard deviation) transverse diameter of the glans clitoris was  $3.4 \pm 1.0$  mm. The longitudinal diameter of the glans was  $5.1 \pm 1.4$  mm. Total clitoral length including glans and body was  $16.0 \pm 4.3$  mm. The mean clitoral index was  $18.5 \text{ mm}^2$ . Measurements of all diameters were normally distributed. Age, height, weight, or current use of OCs did not influence clitoral size, but parous women had significantly larger measurements.

**Conclusions:** It is possible to obtain useful clitoral measurements in the office setting. Parity influences clitoral size, but age, height, weight, and OC use do not. (*Obstet Gynecol* 1992;80:41-4)

The normal clitoris is regularly observed at pelvic examination, but infrequently discussed in the medical literature. Declaring that "the genitalia have been the subject of no proper study of types and dimensions," Dickinson and Pierson<sup>1</sup> in 1925 published observations of the transverse and longitudinal diameters of the glans clitoris in 100 American women. Although the length of the adult clitoris has been estimated to be "about 2 to 2.5 cm,"<sup>2</sup> and Huffman<sup>3</sup> introduced the concept of a clitoral index (the product of glans width times glans length), few studies have precisely measured clitoral dimensions. This report extends the number of observations of normal clitoral measurements in women and assesses the effect on clitoral size of age, height, weight, parity, and current oral contraceptive (OC) use.

## Materials and Methods

We recorded clitoral size in 200 consecutive, regularly menstruating women without historical or anatomical

evidence of hyperandrogenism or other endocrinopathy, presenting for routine gynecologic examination in a private office setting. Ninety-nine percent were white; 1% were black. Measurement of the clitoris was precisely performed with plastic calipers, the sharp edges of which were rounded for comfort (Figure 1). Glans width was assessed in its greatest transverse diameter, glans length from its tip to the back of the corona, and total clitoral length was measured as the distance from the tip of the glans to the point at the symphysis pubis at which the crura were thought to insert, thus including the clitoral body and glans. These women ranged in age from 14-56 years (mean  $\pm$  standard deviation [SD]  $28 \pm 7.9$ ; median 35.0).

The patients varied in height from 60-72 in (mean  $64.4 \pm 2.4$ ; median 66.0). Sixty percent had delivered one to four children and 40% were nulliparous; 33% were using OCs at the time of examination and 67% were on no medications. The body mass index<sup>4</sup> (weight/height<sup>2</sup>) was used to adjust relative weights. The clitoral index as described by Huffman<sup>3</sup> was calculated for each patient and used in addition to observed measurements as the basis for assessing the effect on clitoral size of age, height, weight, parity, and current OC use.

Results were analyzed using the SAS statistical package (SAS Institute, Cary, NC). Individual distributions were analyzed using the univariate procedure and normalcy estimated with the Shapiro-Wilk statistic. Correlations among continuous variables were assessed with the Pearson coefficient; comparisons between nulliparous and parous women, and OC users versus non-users, were made with the unmatched *t* test. All tests were two-tailed, and  $P < .05$  was used as the level of significance.

## Results

Table 1 presents the clitoral measurements obtained for the group of 200 women. Each of the measurements was unimodal, with medians and means coinciding. Each of the sets of measurements conformed

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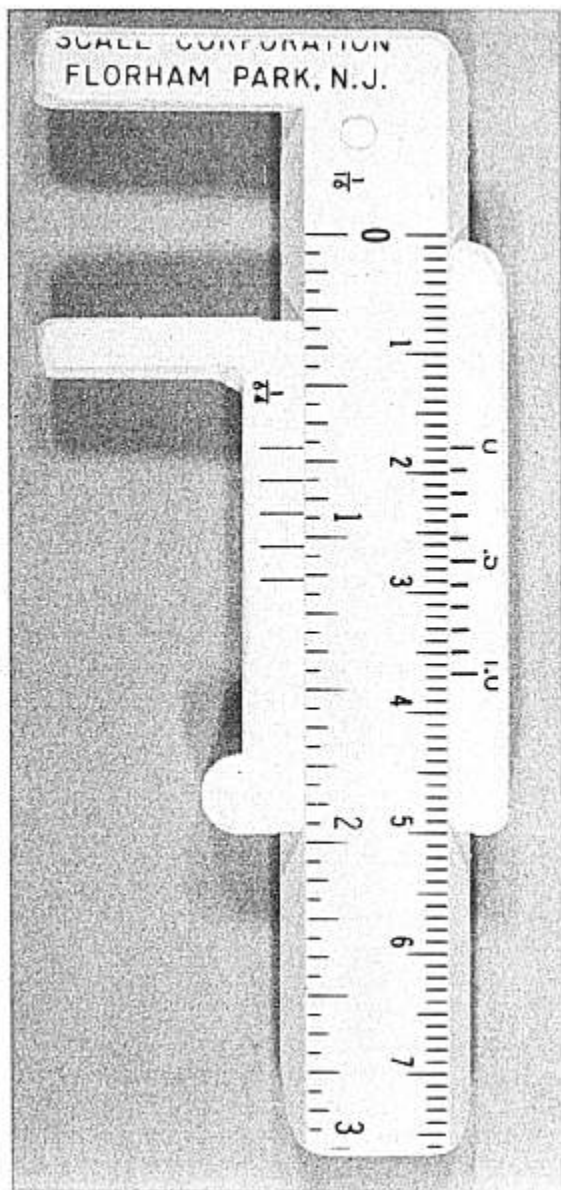


Figure 1. Calipers used to measure the clitoris.

fairly well to a normal distribution, with Shapiro-Wilk statistics between 0.90–0.98 (a value of 1.0 indicates complete conformity). Clitoral measurements did not demonstrate any significant relationship with the subjects' height, weight, body mass index, or age (Table 2). Glans length and width, clitoral index, and total clitoral length were all significantly correlated.

When the 66 women using OCs were compared with those not using hormonal therapy, there was no difference in any of the measurements. In contrast, there was a significant difference in the glans length and width and the derived clitoral index when nulliparous

Table 1. Clitoral Measurements by Parity

Measurement	Mean $\pm$ SD	5%	95%	S-W*
All subjects (N = 200)				
Total length (mm)	16.0 $\pm$ 4.3	10.1	23.0	0.97
Glans length (mm)	5.1 $\pm$ 1.4	3.0	7.0	0.94
Glans width (mm)	3.4 $\pm$ 1.0	2.0	5.0	0.90
Clitoral index (mm <sup>2</sup> )	18.5 $\pm$ 9.5	6.0	35.5	0.95
Nulliparous (N = 80)				
Total length (mm)	15.4 $\pm$ 4.3	9.5	23.0	0.97
Glans length (mm)	4.8 $\pm$ 1.3	2.5	7.0	0.93
Glans width (mm)	3.2 $\pm$ 1.0	1.5	5.0	0.91
Clitoral index (mm <sup>2</sup> )	16.3 $\pm$ 8.3	3.5	30.0	0.95
Parous (N = 120)				
Total length (mm)	16.3 $\pm$ 4.3	10.0	23.0	0.98
Glans length (mm)	5.3 $\pm$ 1.5	3.0	8.0	0.94
Glans width (mm)	3.6 $\pm$ 1.0	2.0	5.0	0.90
Clitoral index (mm <sup>2</sup> )	19.9 $\pm$ 10.1	7.0	38.0	0.94

\* Shapiro-Wilk test for conformity to normal distribution.

women were compared with parous women (Table 3). Though not statistically significant ( $P = .10$ ), the data suggested a progressive trend toward larger total clitoral length with increasing parity.

### Discussion

The clitoris is the homologue of the penis. It is a cylindrical, erectile organ composed of three parts: the glans, corpus or body, and the crura. The glans is visible between the labia minora, which bifurcate forming the upper prepuce and lower frenulum. The body of the clitoris extends under the skin, dividing into two crura which attach to the undersurface of the symphysis pubis.

Masters and Johnson<sup>5</sup> found clitoral configuration to be quite variable. They described women with a long thin shaft surmounted by a relatively small glans, or a short thick shaft with a rather large glans, with frequent variations and combinations.

The measurement of total clitoral length (glans and corpus) is complicated by the difficulty in determining the precise point of insertion of the crura beneath the symphysis. Measurements of the glans are more easily

Table 2. Correlations Between Clitoral Measurements and Physical Characteristics

Measurement	Physical characteristic*			
	Height	Weight	BMI	Age
Total length	0.13	-0.01	0.03	-0.02
Glans length	0.10	0.03	0.04	0.10
Glans width	0.09	0.00	-0.02	0.09
Clitoral index	0.00	0.02	0.04	0.11

BMI = body mass index.

\* All correlations  $P > .2$ .

and reproducibly obtained, and have been more widely applied to the assessment of clinical problems. We found measurements of both total clitoral length and clitoral glans to be facilitated by the use of the calipers, but this measurement can be made by either a measuring tape or a flat ruler.

During normal fetal development, clitoral size reaches its maximum during the 27th gestational week, with little change thereafter during gestation or infancy.<sup>6,7</sup> Personal observations led Huffman et al<sup>8</sup> to conclude that in young children the sagittal and transverse clitoral glans measurements each average 3 mm, with little growth during childhood; accelerated growth occurs during the postmenarcheal years. Moreover, Huffman et al<sup>8</sup> suggested a gradual increase in clitoral size as reflected by the clitoral index in normal females, from a mean of about 4 mm in childhood to 20 mm in the fourth decade of life to approximately 30 mm in the postmenopausal years. Our data do not show significant changes or progressive growth in clitoral size in women of reproductive age. Our study did not address differences in clitoral size attributable to race or ethnic group, but none have been observed in infants.<sup>6,7</sup>

We found the mean total clitoral length to be  $16.0 \pm 4.3$  mm. The more easily measured mean transverse diameter of the glans was  $3.4 \pm 1.0$  mm, and the mean longitudinal diameter of the normal glans was  $5.1 \pm 1.4$  mm. These observations closely mirror those of Dickinson and Pierson,<sup>1</sup> who found the mean transverse diameter of the glans to be 4.4 mm and the mean longitudinal diameter to be 5.5 mm. Frequency distributions of glans transverse and longitudinal diameters of our patients and those of Dickinson and Pierson are parallel (Figure 2).

Acquired clitoral enlargement in adult women occurs under a variety of circumstances.<sup>9</sup> Neoplastic, inflammatory, and traumatic etiologies of clitoral enlargement are usually easily recognized by the medical history and physical findings. Clitoral distortion is most often asymmetrical. By contrast, genetic or endocrinologic causes of clitoral hypertrophy tend to result in symmetrical enlargement, and the historical data are often less clear. It is helpful for the clinician to have

**Table 3. Effect of Parity on Clitoral Measurements**

Measurement	Para 0 (N = 80)	Para >0 (N = 120)	P
Total length	$15.4 \pm 0.5$	$16.3 \pm 0.4$	.13
Glans length	$4.8 \pm 0.2$	$5.3 \pm 0.1$	.01
Glans width	$3.2 \pm 0.1$	$3.6 \pm 0.1$	.01
Clitoral index	$16.3 \pm 0.9$	$19.9 \pm 0.9$	.01

Data are presented as mean  $\pm$  SEM.

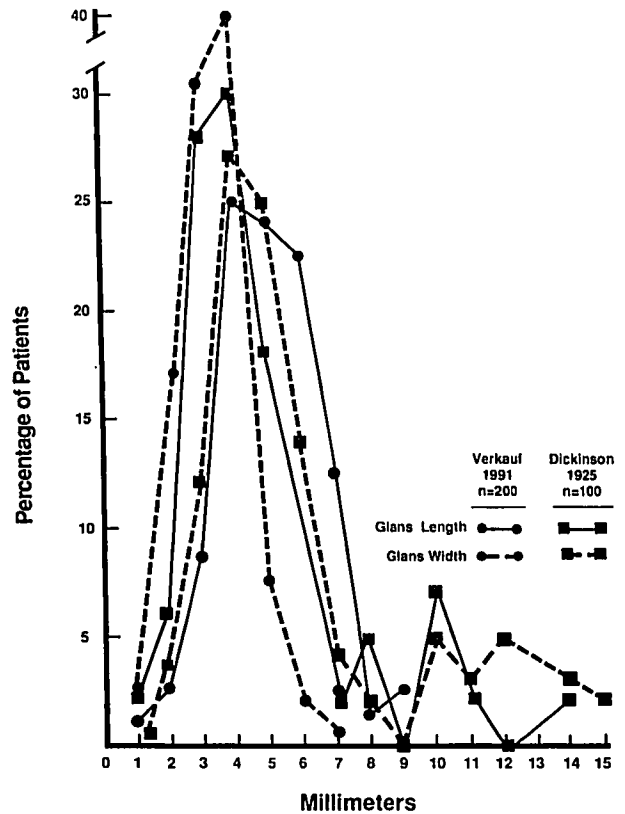


Figure 2. Frequency distributions of clitoral glans length and width.

some objective frame of reference in evaluating normal clitoral size.

Although we found total clitoral length to be measured with relative ease with calipers, in the past this measurement has been considered less reliable than that of the glans clitoris, and it has been little used for clinical purposes. Huffman<sup>3</sup> found the clitoral index to average  $18 \text{ mm}^2$  in women of reproductive age. This measurement is similar to our own observations and those of Tagatz et al.<sup>10</sup> Moreover, Tagatz et al found that 95% of normal women between ages 17–35 had a clitoral index of less than  $35 \text{ mm}^2$ . Ninety-four percent of our patients also had a clitoral index less than  $35 \text{ mm}^2$ . By contrast, women with clinical evidence of hyperandrogenism by virtue of excess sebum, acne, hirsutism, increased muscle mass, menstrual irregularity, and elevated urinary or plasma androgens are commonly found to have clitoral indexes of greater than  $35 \text{ mm}^2$ .<sup>10,11</sup>

### References

1. Dickinson RL, Pierson HH. The average sex life of American women. *JAMA* 1925;85:1113–7.

2. Lowry TP, Lowry TS. The clitoris. St. Louis: Warren H. Greene, 1976:15.
3. Huffman J. The gynecology of childhood and adolescence. Philadelphia: WB Saunders, 1969:68-9.
4. Thomas AE, McKay DA, Cutlip MB. A nomograph method for assessing body weight. *Am J Clin Nutr* 1976;29:302-4.
5. Masters WH, Johnson VE. Human sexual response. Boston: Little Brown, 1976:47-8.
6. Riley WJ, Rosenbloom AL. Clitoral size in infancy. *J Pediatr* 1980;96:918-9.
7. Oberfield SE, Mondok A, Shahrivan F, Klein JF, Levine LS. Clitoral size in full-term infants. *Am J Perinatol* 1989;6:653-4.
8. Huffman JW, Dewhurst CJ, Capraro VJ. The gynecology of childhood and adolescence. 2nd ed. Philadelphia: WB Saunders, 1981:27-8.
9. Verkauf BS. Acquired clitoral enlargement. *Med Asp Hum Sex* 1975:134-51.
10. Tagatz GE, Kopher RA, Nagel TC, Okagaki T. The clitoral index: A bioassay of androgenic stimulation. *Obstet Gynecol* 1979;54: 562-4.
11. Mathur RS, Holtz G, Baker ER, et al. Plasma androgens, 17-beta estradiol, and sex hormone binding globulin in patients with hirsutism and/or clitoromegaly. *Fertil Steril* 1988;36:188-93.

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