

## Relationship between the Ideal Female Buttock and the Golden Ratio

Edoardo Raposio, MD, PhD, FICS\*†; Sara Brocca, MSc\*; Giorgio Raposio, MSc\*

The gluteal region has emerged as a prominent area of interest in plastic surgery in recent years, as evidenced by trends in body contouring procedures. Gluteoplasty and the Brazilian butt lift are increasingly sought-after and performed procedures. The morphological characteristics that define an aesthetically pleasing female buttock are numerous and extend beyond the simple ideal waist-to-hip ratio of 0.7.<sup>1</sup> The shape, volume, and projection of the buttocks are among the factors that contribute harmoniously to defining aesthetically pleasing buttocks.<sup>2</sup> However, when describing the ideal of female buttock beauty, the generic term “curves” or, at most, sections (or arcs) of circumference are typically used. According to this perspective, the points of greatest lateral and inferior prominence generally align with the precise midpoint of the respective circumference arcs (lateral and inferior) used to characterize the ideal female gluteal profile.

The golden section, also known as the golden ratio, is a mathematical proportion approximately equal to 1.618, which is widely regarded as aesthetically pleasing to the human eye. It is derived by dividing a line into two segments, where the longer segment (a) divided by the shorter segment (b) equals the sum of both segments (a + b) divided by the longer segment (a), resulting in 1:1.618.<sup>3</sup> A golden rectangle is a rectangle whose side lengths are in the golden ratio, expressed as  $(a + b)/a = 1.618$ . Golden rectangles exhibit a unique form of self-similarity and visual appeal. Within golden rectangles, Fibonacci (golden) spirals are inscribed, progressively decreasing in size. The spiral is formed by progressively nesting smaller golden rectangles within a larger golden rectangle. Interestingly, we observed that the perimeter of a golden spiral closely resembles what is commonly considered an attractive female buttock shape, both when standing (Fig. 1) and sitting (Fig. 2). This apparent correlation helps elucidate why certain

buttock shapes are deemed attractive whereas others are not. Furthermore, in our opinion, this geometric analysis can offer practical insights for achieving optimal results in buttock cosmetic surgery. According to the golden spiral, the most prominent lateral point (A) is positioned inferiorly compared with the commonly assumed location (ie, approximately in the middle of the gluteal curvature) (Figs. 1 and 2). Similarly, the point of greatest inferior projection (B), located in the subgluteal groove, is noticeably displaced more medially than typically thought (ie, around the midline) (Figs. 1 and 2). This contrasts with the earlier mention (precise halfway points of the lateral and inferior arches), but, in our view, it contributes to a more aesthetically pleasing and natural profile. In previous work, Mendieta et al<sup>4</sup> described several guidelines to be followed in the preoperative planning of gluteal plasty. According to their detailed considerations, the areas to be aspirated (superior sacrum, upper and lower-lateral flank, lower gluteal curve, and lateral thigh) ideally circumscribe the contour of the spiral. The only slight difference is that, in their design, the point of maximum lateral projection is slightly shifted upwards. Abboud et al<sup>5</sup> described a detailed system of lines to identify an imaginary sacral diamond and surrounding structures to facilitate preoperative drawing. Although starting from completely different assumptions and considerations, it is quite surprising to note that the identification of the lowest point of the infra-gluteal sulcus is identical in both their method and ours. According to those authors, this point must fall along the vertical dorsal midaxillary point-popliteal fossa line, and then be displaced medially with respect to the midpoint of the infra-gluteal sulcus. Unfortunately, our considerations are exclusively formulated from an aesthetic-geometric point of view, without the aid of clinical cases. Nevertheless, we hope that these subtle observations could provide valuable insights for preoperative planning in cosmetic buttock surgery.

From the \*Department of Surgical Sciences and Integrated Diagnostics (DISC), University of Genova, Genova, Italy; and †Plastic and Reconstructive Surgery Division, IRCCS Ospedale Policlinico San Martino, Genova, Italy.

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Edoardo Raposio, MD, PhD, FICS

Department of Surgical Sciences and Integrated Diagnostics

University of Genova

Viale Benedetto XV, n.6, 16132

Genova, Italy

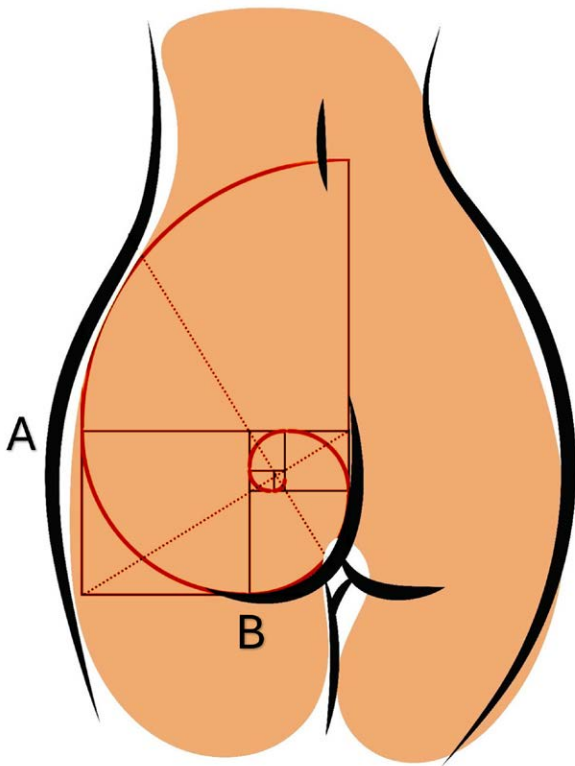
E-mail: [edoardo.raposio@unige.it](mailto:edoardo.raposio@unige.it)

### DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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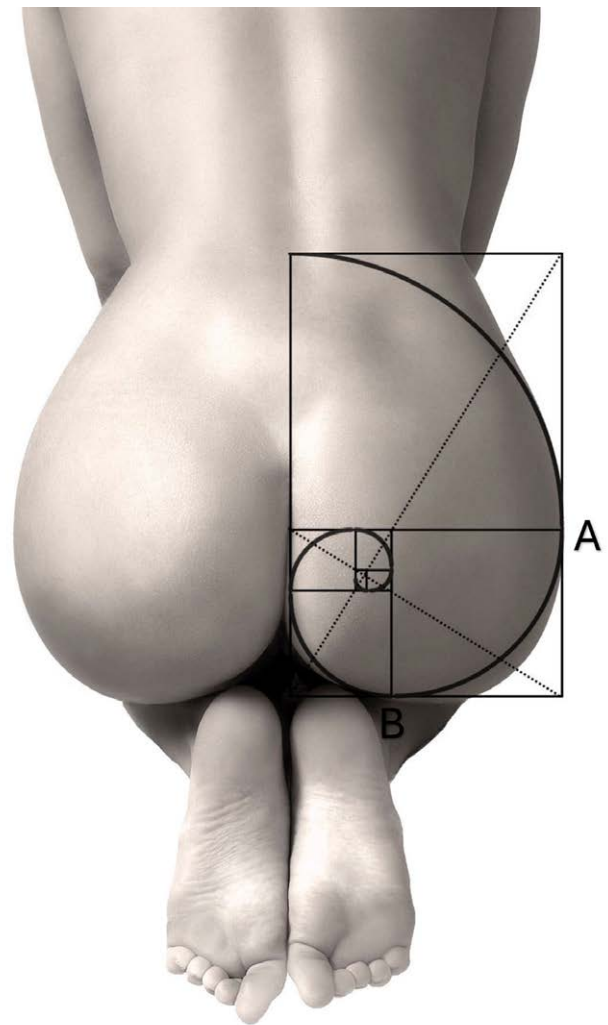
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**Fig. 1.** Golden (Fibonacci) spiral inscribed within a beautiful standing female buttock. A, Point of greatest lateral projection. B, Point of greatest inferior projection.

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**Fig. 2.** Golden (Fibonacci) spiral inscribed within a beautiful seated female buttock. A, Point of greatest lateral projection. B, Point of greatest inferior projection.

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