

## Colpocleisis – is this just a history? – A comparative national database study

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### Hypothesis / Aim of the study:

The prevalence of pelvic organ prolapse is estimated to be around 40%. When conservative options are exhausted, surgical management options come into consideration, primarily divided into reconstructive and obliterative approaches. The lifetime risk of undergoing operative repair for pelvic organ prolapse is estimated to be approximately 15%, with a cumulative risk of subsequent surgery due to either prolapse in another compartment or recurrence at approximately 30%. As the aging population continues to grow, there is a probable escalation in the surgical rate, leading to an increase in recurrence interventions.

Given the reported high recurrence rates, particularly following traditional vaginal native tissue repair (NTR), which can reach up to 50%, innovative technologies such as transvaginal mesh repair for pelvic organ prolapse (POP) emerged in the early 2000s. Mesh placement gained traction in subsequent years as a promising approach to mitigate the recurrence risk associated with prolapse surgery. However, in response to the increasing trend in transvaginal mesh surgeries and the rising complication rates linked to mesh implants, the FDA issued consecutive warnings and prohibited their sale in 2019. In contrast to the FDA's stance, the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR), the European Urology Association (EAU), and the European Urogynaecological Association (EUGA) have issued positive statements endorsing the use of transvaginal meshes for treating urinary incontinence and pelvic organ prolapse. According to their statements, transvaginal mesh repair remains a crucial treatment option for POP, and numerous mesh devices designed for POP treatment remain available worldwide, including in Germany. The diverse perspectives of various societies have exerted significant influence on the surgical approaches and treatment options for pelvic organ prolapse at an international level.

As an alternative to reconstructive surgery, colpocleisis represents an alternative obliterative approach to treating a pelvic organ prolapse. Historically, colpocleisis was introduced by Neugebauer in 1868. Lefort likely became the first to publish his work on the technique internationally, which continues to be utilized today with only minor modifications.

We hypothesize that the trend of "historical" colpocleisis varies depending on the availability of products for treating pelvic organ prolapse (POP) and is currently regaining popularity, representing an increasing component of treatment in corresponding groups in many countries. This study aims to present the rates of obliterative procedures over the years in an era where the perspective on mesh surgery is contentious, particularly comparing countries where meshes are still used with countries where transvaginal mesh (TVM) is prohibited.

### Study design, materials, and methods:

In this analysis, we utilized data from the German Federal Statistical Office, encompassing information on the annual count of surgeries categorized by surgery codes (OPS codes) for in-patients lacking specific medical indications. To establish a systematically classified dataset, we scrutinized OPS codes pertinent to obliterative vaginal surgery, including its corresponding code (OPS-5-703.0), spanning the years reflecting the period of transition concerning transvaginal mesh surgery from 2005 to 2021.

For the evaluation of age distribution's impact on surgery numbers, the outcomes were stratified into six age cohorts: under 50 years (<50), between 50 and 60 years (50-60), between 60 and 70 years (60-70), between 70 and 80 years (70-80), between 80 and 90 years (80-90), and over 90 years (>90). Univariate linear regression analyses with time as the independent factor were conducted on our dataset using SPSS Version 25 to assess the trends of the curves. A p-value < 0.05 was deemed statistically significant. A literature review to compile accessible comparative data was executed through searches in the PUBMED/Medline databases. The comparison was undertaken based on narrative comments.

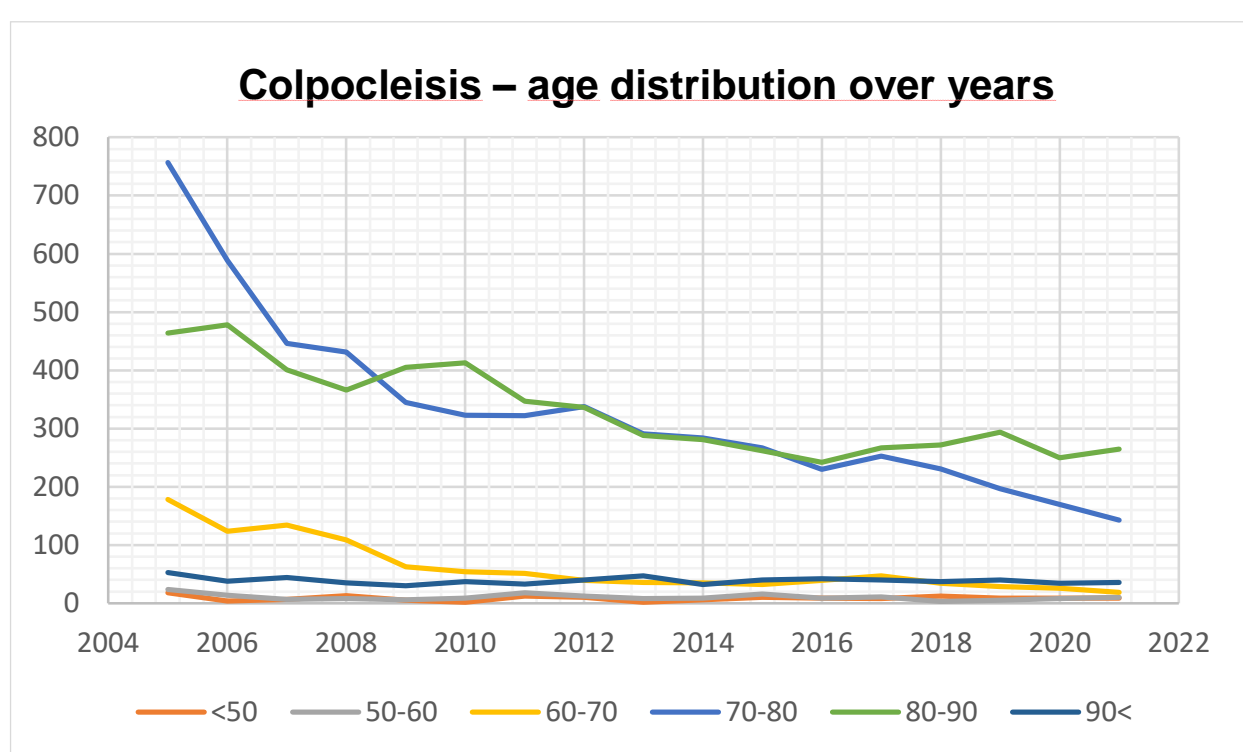


Figure 2: Colpocleisis – age distribution

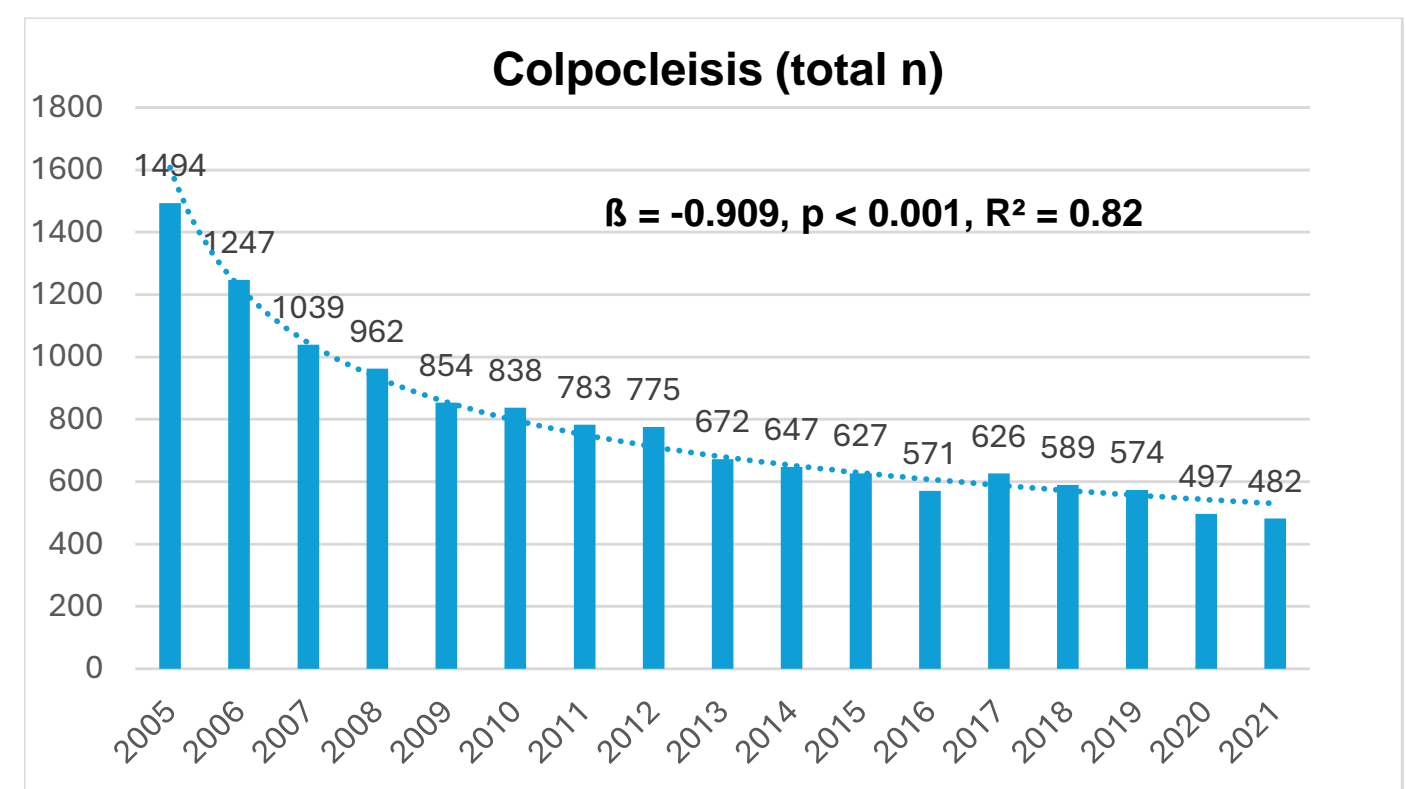
### Results

In total, 13,277 surgeries were recorded and included in the study. The trends in obliterative surgery “colpocleisis”, regardless of age, demonstrated a significant decline over the years encompassed in this investigation ( $\beta = -0.909$ ,  $p < 0.001$ ,  $R^2 = 0.82$ ) (see Figure 1). Upon stratifying by age distribution, cohorts within younger age group [under 50 years ( $n=145$ ), between 50 and 60 years ( $n=177$ )] exhibited notable differences compared to older age groups [between 60 and 70 years ( $n=1049$ ), between 70 and 80 years ( $n=5617$ ), between 80 and 90 years ( $n=5631$ ), and over 90 years ( $n=658$ )], regarding the overall case count. Despite a lower-case count, the obliterative alternative seems to have been relatively maintained in the age group over 90. However, a significant reduction is observed in the age groups of 60-70, 70-80, and 80-90 (see Figure 2).

### Interpretation of results:

The evolving landscape of urogynecology over the years has impacted the patterns of prolapse surgery within specific demographics. Colpocleisis, an obliterative procedure for treating pelvic organ prolapse, has experienced a noticeable decline over time 1, coinciding with the emergence of alternative options such as abdominal routes and transvaginal mesh surgery. Nevertheless, amidst the changing dynamics of mesh surgery, colpocleisis seems to be experiencing a resurgence as an alternative approach, particularly in regions where transvaginal mesh surgery has decreased following FDA warnings 2. The FDA alerts and evolving trends appear to be rejuvenating interest in colpocleisis surgery, especially within a specific group, given its established history. In countries like Germany, where transvaginal mesh remains a preferred option under specific conditions for treating POP 3, colpocleisis surgery is observed to exhibit a declining or relatively infrequent application trend.

Figure 1: Trend over years



### Concluding message:

Colpocleisis, serving as an obliterative treatment for POP, demonstrates impressive anatomical success rates of up to 98% and satisfaction rates of 92%. Historically, it has been reserved for frail, elderly patients with advanced apical prolapse who are deemed unsuitable candidates for vaginal reconstructive procedures. The preference for this traditional method appears to hinge on the evolving market dynamics. The inclination towards colpocleisis exhibits significant variations across regions or nations, influenced by changing perspectives regarding mesh surgery and diverse management practices, particularly within a specific patient subset. These trends suggest a reliance on evolving market conditions and training approaches. This study emphasizes the correlation between evolving market trends and training methodologies.

### References

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