

**Title:** Long-term risk of reoperation after vaginal vault suspension – a nationwide cohort study based on surgical technique. Part of the DIVA study.

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## **Objective**

To identify the surgical procedure associated with the lowest reoperation rate following apical suspension and to evaluate regional variations and temporal trends in vaginal vault suspensions performed in Denmark between January 1, 2010 and December 31, 2020.

## **Methods**

This nationwide cohort study was based on data from the Danish Urogynecological Database (DugaBase) with long-term follow-up of 3–14 years. Participants were identified using NOMESCO procedure codes, verified by medical record review, and met inclusion criteria of prior hysterectomy and primary surgery for vaginal vault prolapse between January 1, 2010 and December 31, 2020. The included surgical techniques were sacrocolpopexy (SCP), laparoscopic uterosacral ligament suspension (LUSLS), ipsilateral uterosacral ligament suspension (IUSLS), vaginal extraperitoneal uterosacral ligament suspension (VEULS), sacrospinous ligament fixation (SSLF), and SSLF with graft. The risk of reoperation was analyzed using Cox proportional hazards regression adjusted for demographic factors, comorbidities, prior anterior/posterior prolapse surgery, prolapse stage, concomitant procedures, and surgeon experience.

## **Results**

Among 1,374 women, SCP was associated with the lowest rate of apical reoperation (1.3%), whereas SSLF had the highest (23.1%; adjusted hazard ratio [aHR] 42.7 compared with SCP). No single procedure was superior across all compartments. SSLF showed the highest overall reoperation rate (30.7%; aHR 2.14, 95% CI 1.31–3.60;  $p=0.005$ ). IUSLS (aHR 0.46) and VEULS (aHR 0.09) were associated with a reduced risk of anterior reoperation, whereas posterior reoperation was less frequent after IUSLS, SSLF, and SSLF with graft (aHR 0.30, 0.30, and 0.09, respectively). SSLF was the most commonly performed procedure (45.1%).

## **Conclusion**

Long-term reoperation risk varies by surgical technique, with SCP providing the most durable apical support and SSLF showing higher recurrence with additional regional differences in the utilization of specific procedures.