

## Comment to: Recurrence mechanisms after inguinal hernia repair by the Onstep technique: a case series

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Dear Editor,

We read with interest the article ‘Recurrence mechanisms after inguinal hernia repair by the Onstep technique: a case series’ by Öberg and colleagues [1]. We congratulate the research group with their attempts to provide more Onstep insights after the primary publication from Portugal [2]. Nevertheless, some remarks should be mentioned describing recurrence rates after the Onstep method. The European Hernia Society Guideline provides direction for mesh positions in inguinal hernia repair such as Lichtenstein’s onlay (or, in fact: ‘inlay’). Also techniques with a preperitoneal mesh position (‘endoscopically’ or ‘open’) such as TEP, TAPP, TIPP or TREPP are described in guidelines. In these techniques meshes are positioned as sublay using the “upstream principle” [3]. Based on physical principles, one can understand that a complete coverage of the abdominal wall defect (the insufficient shutter mechanism of the internal ring) with a mesh is needed to solve the problem of bulging.

To minimize the risk for chronic postoperative inguinal pain (CPIP), the preperitoneal mesh position shows benefits compared to the onlay mesh position [4].

The Onstep method ignores this principle of “upstream”, which is the intra-abdominal pressure against the abdominal wall. Hypothetically, the ‘recurrence’ is a fact as soon as an Onstep procedure is finished. The inserted mesh ‘creates’ a continuing persisting defect of the abdominal wall. Logically all abdominal pressure will push against the ‘necessary’ stitches at the level of persisting weakness. Not surprisingly, the Onstep recurrence rate of 4.6% is high and may very well be higher after long term follow up. Even for dedicated hernia surgeons it is difficult to understand that a fixated mesh keeps the route to the preperitoneal space open (through the internal ring), rather than completely covering it from the outside or inside (onlay *or* sublay). Furthermore, it has been shown repeatedly that flat mesh placement is essential to minimize foreign body reaction, mesh ‘shrinkage’ and to allow good ingrowth [5], and inserting this mesh in two different anatomical planes will do anything with a mesh but that.

To date, it may be suggested to make a choice: use an onlay—or preperitoneal (sublay) technique for inguinal hernia repair. Development of a solid and reliable complete preperitoneal technique for inguinal hernia repair should be evidence based, warranting minimizing the risk of bias and reported in line with the CONSORT statements. Moreover, the important recommendations of Reinbold should be taken into account, such as: stay away from the nerves and the inguinal canal during dissection, preperitoneal mesh positioning out of reach of the nerves without the need for mesh fixation, and no dissection nor reconstruction of the inguinal canal [6].

Based on physics laws and the knowledge of anatomical planes we strongly do *not* recommend this ‘in-between-method’ of Onstep for patients with an inguinal hernia.

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The global evolution to ‘the best and most tailored’ inguinal hernia repair technique should be cautiously enrolled, one step at the time.

#### Compliance with ethical standards

**Conflict of interest** GK declares no conflict of interest.  
PV declares no conflict of interest.  
FB declares no conflict of interest.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its amendments or comparable ethical standards.

**Human and animal rights** This article does not contain any studies with human participants or animals performed by any authors.

**Informed consent** For this type of study formal consent is not required.

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