What is minimally invasive surgery?

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Received: 2 January 2018 / Accepted: 3 January 2018 / Published online: 31 January 2018
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Limited incision?

There is no doubt that a smaller incision augurs improved pain relief and improved cosmesis compared with standard incision.

Any limited incision brings the possibility of injuring the skin and soft tissues by stretching to get a better look in a reduced visual surgical field. This in turn can cause a longer operating time (and resulting cost).

But as the surgical team becomes more familiar with these procedures, there are quickly, after a learning curve, shorter surgical times.

A reduced visual field may lead to an increased rate of bone complications and poor component position in operations with implant insertion, which in turn may lead to more frequent failures and possibly decreased survivorship.

There is also a higher risk of neurovascular injury leading to iatrogenic nerve damage and vascular injury resulting in thrombosis or bleeding.

In theory, because of these difficulties and possibly higher complication rates, the risk of reoperation is higher.

However, we can be reassured by the literature of the last years, as seen in the articles of the different experts of this review.

Finally, the contributions of limited incision can be categorized into critical goals (reduced pain and quicker return to function) and secondary consequences (shorter hospital stay and less cost).

But it is clear that the minimal incision technique is not de facto minimally invasive surgery.

Less aggressive technique?

Despite temptation, most surgeons didn't get caught in the trap to be limited to a smaller incision, even if it could get personal advertising. Won over by the first publications at the end of the 1990s, they tried to improve their technique by saving at the most the soft tissue in depth and repairing what they had damaged.

This approach is a technically demanding procedure; thus, potential disadvantages are related to the need for extensive learning curve.

The result was less muscle damage, reduced blood loss and fewer blood transfusion requirements.

This change brought less pain and allowed especially improved short-term recovery (earlier return to normal gait, earlier return of quadriceps function and motion considerably faster achieved, for example).

It must be noted that less pain and improved cosmesis in view of a small incision are making a significant contribution to the psychological impact on patient's attitude, satisfaction and motivation for speeded up recovery. All authors report decreased pain scores and use of analgesics.

This less-invasive surgery needs generally the use of downsized and dedicated instrumentation, making bone cuts in situ, and minimal dislocation. As a result have emerged a multitude of implants and ancillary material to the delight of many manufacturers.

Shorter hospitalization?

Over the past decade, fast-track surgery has gained popularity as a means of optimizing early postoperative rehabilitation and increasing patient satisfaction.

This achievement follows much preparation well before operation: organizational and psychosocial. These are two elements, combined with almost total absence of pain, particularly through sustained local anesthesia, that will enable us to expand access to fast-track surgery to most of people.

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This approach brings quicker rehabilitation and hence significant decrease in length of hospital stay.

The corollary of this is that, finally, the minimally invasive techniques are cost-efficient.

The short-stay protocol was not associated with a higher complication rate and must be encouraged.

In conclusion

Minimally invasive techniques are safe and reproducible in the hands of an experienced surgeon and with selected and appropriated patients.

First advantages are relatively few postoperative complications comparable to or less than previous classic methods.

Therefore, minimally invasive techniques are currently more and more used in many surgical procedures on the soft tissues and bones from the hip to the foot.

Compliance with ethical standards

Conflict of interest The author has a contract as medical advisor to Graftys SA, 13 854 Aix en Provence.