



Economic Impact Evaluation Case Study: Episcissors-60

1. Background

Episcissors-60[®] are fixed angle surgical scissors used for episiotomy during childbirth. They are designed to take away human error in estimating episiotomy angles and achieve a mediolateral cut at 60° to the perineal midline, hence minimising the risk of obstetric anal sphincter muscle injuries (OASIS) which requires surgical correction.¹ Initial results after the introduction of Episcissors-60 show that the majority of health care professionals achieve desired post-suturing episiotomy angles between 40° and 60°.²

The average rate of episiotomies in England is 15%³ and the average number of births per NHS trust in England is 4,800 per year, giving rise to approximately 720 episiotomies per trust.⁴ The current incidence of OASIS is 40 per 1000 births per year.⁵ There are significant costs associated with OASIS, quite apart from the impact on the quality of life for the women involved. There are major cost implications for both primary and secondary repairs of OASIS. In addition, the National Health Service Litigation Authority (2012), in their report of 10 years of claims, cite OASIS as being the fourth largest cause for litigation in obstetrics.⁶

Episcissors-60 are manufactured by Medinvent Ltd and are now being widely adopted in England, Western Europe and Australia. Fifty NHS trusts in the UK are using Episcissors-60.⁷ The scissors are available exclusively through NHS Supply Chain and they are eligible for the NHS Innovation and Technology Tariff.

This case study focuses on the potential return on investment of replacing standard episiotomy scissors (usual care) with the use of Episcissors-60, to undertake episiotomy during childbirth.

¹ Lou YY et al. Does Episcissors-60 -60 reduce the incidence of obstetric anal sphincter injuries (OASIS)? *British Journal of Obstetrics & Gynaecology Abstracts* p.50 2016.

² Van Roon Y et al. Comparison of obstetric anal sphincter injuries in nulliparous women before and after introduction of the EPISC ISS ORS -60[®] at two hospitals in the United Kingdom. *International Journal of Women's Health*. 9 December 2015.

³ NHS. The Information centre:- HES online: Deliveries with episiotomy by method of delivery, 1975 to 2010-11.

⁴ NHS Digital. *Hospital Maternity Activity, 2015-16 Provider Level analysis 2014-15 to 2015-16*. November 2016.

⁵ Khapoor D. *NIA economic analysis framework: Episcissors-60*. March 2017.

⁶ National Health Service Litigation Authority. *Ten Years of Maternity Claims: An Analysis of NHS Litigation Authority Data*. NHSLA, 2012.

⁷ NIA Fellow, June 2017.

2. Input costs

The exact development costs for Episissors-60 are not known but are estimated to be in the region of £500,000 over 10 years.

According to the Medinvent guidance, the unit cost of Episissors-60 is £320 per pair and each pair has a lifetime of five years. Based on the 20 uses per pair referred to in the Medinvent guidance, there is an estimated cost of £16 per use, although experience has shown that each pair may actually be used between 50-100 times, thereby reducing the cost.⁸ There are no maintenance costs and no additional sterilisation requirements.

Staff training is assumed to be absorbed into the cost of usual care as the use of Episissors-60 is easily learned by doctors and midwives.⁹

3. Outcomes

Women who experience OASIS will need repair surgery, may suffer complications such as infection, anal incontinence, postpartum urinary retention, pain and depression¹⁰ and in some cases will need caesarian section births in the future.¹¹ In effectiveness trials, Episissors-60 have been found to reduce the incidence of OASIS by 43% (range 20-50%), an absolute reduction in the OASIS rate from 5.6% to 3.2% (i.e. a rate reduction of 2.4%).¹² There are also intangible benefits from Episissors-60, such as the promotion of safety culture and avoided costs from legal claims in some cases.¹³ The outcome metrics for Episissors-60 have been valued in Table 3.1.

Table 3.1: Impacts, metrics and proxy values for use of Episissors-60

Impact	Metric	Proxy value
Avoided incidence of OASIS	Treatment cost of surgical correction of OASIS £1,726 (surgery tariff of £1,301 ¹⁴ plus consumables @ £425 per case ¹⁵)	£1,726
Avoided complications of OASIS	Treatment costs for complications e.g. infection, pain, incontinence, mental health problems	Information not available
Avoided caesarean section for subsequent births	Net difference of £704 between cost of C-section (£2,369) and vaginal delivery (£1,665) ¹⁶	£704
Avoided time off work for treatment (surgery and physiotherapy)	Average salary £28,200 pa (size of effect not available)	Not possible to quantify

⁸ NIA Fellow. June 2017.

⁹ Medinvent Limited. Episissors-60 -60. *Universal guidance and service specifications for NHS Trusts and Commissioners*. Not dated.

¹⁰ Harvey MA & Pierce M. *Obstetrical Anal Sphincter Injuries (OASIS): Prevention, Recognition, and Repair*. J Obstet Gynaecol Can 2015;37(12):1131–1148.

¹¹ Khapoor D. *NIA analysis framework: Episissors-60*. March 2017.

¹² Lou YY et al. Does Episissors-60 -60 reduce the incidence of obstetric anal sphincter injuries (OASIS)? British Journal of Obstetrics & Gynaecology Abstracts p.50 2016.

¹³ Swati JHA, Sultan AH. Obstetric anal sphincter injury: the changing landscape. *BJOG on the case*. 2015.

¹⁴ NHS *Payment by Results tariff 2017/18*, excluding Market Forces factor.

¹⁵ Medinvent Limited. Episissors-60 -60. *Universal guidance and service specifications for NHS Trusts and Commissioners*. Not dated.

¹⁶ NHS *Payment by Results tariff 2017/18*

4. Economic analysis

The information available enables a simple return on investment calculation to be performed, based on the input costs of using Episcissors-60 and the value of the benefits accrued by not using 'usual care'. A number of assumptions are necessary for the purpose of undertaking a base case analysis, as follows:

- The use of Episcissors-60 for episiotomy reduces the rate of OASIS by 43%;
- Women experiencing OASIS will require surgical repair at some point in the days following delivery;
- For every 1,000 births using usual episiotomy scissors there will be 40 cases of OASIS needing repair, at a cost of £69,040 (40 x £1,726);
- For every 1,000 births using Episcissors-60, 17 cases of OASIS will be avoided and there will be 23 cases of OASIS needing repair, at a cost of £39,698 (23 x £1,726);
- For every 1000 births, Episcissors-60 will bring a saving of £29,342 if used in every birth requiring an episiotomy;
- At an episiotomy rate of 15%, the average number of episiotomies in 1000 births is 150;¹⁷
- If Episcissors-60 are used 50 times before being disposed of, three pairs of Episcissors-60 will be needed to perform 150 episiotomies;
- Three pairs of Episcissors-60 at £320 each costs £960 (as the cost of usual episiotomy scissors is not known, the cost of purchasing Episcissors-60 is included in full);
- For the purposes of the ROI calculation, only the OASIS repair is included. Avoided caesarean section for subsequent births is not expected to fall within the same year and is hence not included in the ROI calculation.

Based on the above assumptions and using the stated input costs and outcome values, the financial impact of Episcissors-60 per 1000 births is as shown in Table 4.1.

Table 4.1 Financial impact of Episcissors-60 per 1000 births

Item	Value
Cost of three pairs Episcissors-60 for 1000 births (i.e. 150 episiotomies)	£960
Total value of the outcome metrics for 1000 births based on assumptions above	£29,342
Financial impact: net benefit/(deficit) per 1000 births	£28,382
Financial impact: net saving per case of OASIS avoided (£28,382 / 17)	£1,669.53
Financial impact: net saving per use of Episcissors-60 (£28,382 / 150)	£189.21
Return on investment in Year 1 (£29,342 / £960) x 100	3,056%

¹⁷ NHS The Information centre - HES online - Table: Deliveries with episiotomy by method of delivery, 1975 to 2010-11

The analysis shows the use of Episcissors-60 gives a positive return on investment and is cost effective from an NHS perspective. The positive return on investment will extend beyond the first year, providing Episcissors-60 continue to be used for episiotomies in subsequent years. This is a conservative estimate, as it does not take into account the cost of usual episiotomy scissors (not known), which would lower the net cost of Episcissors-60. Furthermore, it does not include the cost of complications of OASIS, caesarean section for subsequent births, the value of time off work for patients needing surgery or any costs from legal claims.¹⁸

It is not possible to know how many times Episcissors-60 are being used across the country (and hence cases of OASIS avoided). However, if the 50 trusts currently using Episcissors-60 have an average number of births per trust (4,800), there will be a total of 240,000 births. If Episcissors-60 were to be used in all births needing episiotomy, they could be expected to avoid 4,080 cases of OASIS (240 x 17 per 1000 births). At a net saving of £1,669.53 per avoided case of OASIS, this is a total saving of £6,811,682 per year across the 50 trusts. In this scenario, the development costs of approximately £500k would have been more than recouped in one year.

4.1 Sensitivity analysis

The assumptions made in the analysis can be varied to allow for over or under estimation of the impacts and costs, or variations in the typical care pathway. The following scenarios have been tested to observe the effect on the financial impact and return on investment:

- Number of uses per pair of Episcissors-60: if this reduces to 20 times per pair, the ROI reduces to 1,223% and the net saving per avoided case of OASIS decreases to £1,584.82; if this increases to 100 times per pair, the ROI increases to 6,113% and the net saving per avoided case of OASIS increases to £1,697.76;
- Effectiveness of Episcissors-60:
 - If the reduction in incidence of OASIS using Episcissors-60 is 50% (higher value), the ROI increases to 3,596% and the net saving per avoided case of OASIS increases to £1,678;
 - If the reduction in incidence of OASIS using Episcissors-60 is 20% (lower value), the ROI reduces to 1,438% and the net saving per avoided case of OASIS decreases to £1,606.

This shows that the cost effectiveness is relatively insensitive to changes in the impacts or costs.

5. Impact on employment

There is potential for societal benefits if patients have to take less time off work for the treatment of OASIS related complications, although this cannot be easily quantified.

¹⁸ Swati JHA, Sultan AH. Obstetric anal sphincter injury: the changing landscape. *BJOG on the case*. 2015.

6. Conclusion

The analysis undertaken concludes that Episcissors-60 is a cost saving innovation, showing a potential return on investment from an NHS perspective of 3,056%, based on the assumptions stated. There is good quality evidence of the effectiveness of Episcissors-60 upon which to base the analysis.

As stated in the assumptions, the savings are dependent on Episcissors-60 being used in all births requiring episiotomy. The funding for trusts to purchase Episcissors-60 is currently available via the Innovation and Technology Tariff, meaning that the savings from avoided cases of OASIS and the associated treatment will be realised by both commissioners and providers. Based on the assumptions stated, the cost savings accrued from avoided cases of OASIS are estimated to be £28,382 per 1000 births. Across the 50 trusts currently using Episcissors-60, this is a potential total saving of £6,811,682 per year, a figure which is expected to rise as more trusts adopt the technology.

York Health Economics Consortium
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