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Complications and costs to the UK National Health Service due to outward medical tourism for elective surgery: a rapid review

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ABSTRACT

Objectives Outward medical tourism is when people seek medical treatment in a different country to the one they live in. We aimed to identify all studies that describe the impact on the UK National Health Service (NHS) of patients who require treatment due to outward medical tourism for elective surgery and report on complications, costs and benefits.

Design A rapid literature review. Medical and grey literature databases were searched, limited to literature published between 2012 and 2024.

Selection criteria Studies published in the English language, conducted in any NHS setting, describing complications, costs or benefits due to outward medical tourism for elective surgery were included. We excluded emergency and semi-urgent surgery, dental and transplant surgery, cancer treatment and fertility treatment.

Outcome measures Primary outcomes were costs and savings to the NHS. Secondary outcomes were type and frequency, demographics, procedures, complications, treatment, follow-up care and use of NHS resources. Results were summarised narratively. Study quality was assessed using JBI critical appraisal tools and the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach was used for certainty of evidence for costs.

Results Some 35 case series and case reports and two surveys of NHS plastic surgeons were identified. Case studies described 655 patients treated in specific NHS hospitals between 2006 and 2024 for postoperative complications due to metabolic/bariatric surgery (n=385), cosmetic (n=265) and ophthalmic (n=5) surgery tourism. No cases relating to other surgical specialities were identified in the literature. Most patients were women (90%), with an average age of 38 (range 14–69) years. The most common destination for surgery was Turkey (61%). Complications were not well described for metabolic/bariatric surgery tourism; but for cosmetic surgery tourism, infection and wound dehiscence were most commonly reported. There was evidence that some patients needed complex treatment involving long hospital stays and multiple surgical interventions. Very low certainty evidence indicated that costs to the NHS from outward medical tourism for elective surgery ranged from £1058 to £19 549 per patient in 2024 prices. We found no studies that reported on the benefits of outward medical tourism.

Conclusions A systematic approach is needed to collecting information on the number of people who travel abroad for elective surgery and the frequency and impact on the UK NHS of treating complications. Without these data, we cannot fully understand the risk of seeking surgery abroad.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This rapid review included a systematic and comprehensive search of the available literature, including searching the grey literature and citation searching.
⇒ Included studies were case series conducted in single tertiary care specialist units and secondary care hospitals and did not include cases from primary care.
⇒ Evidence was not collected systematically across the UK and is limited in terms of the surgical specialities that are represented.

INTRODUCTION

Outward medical tourism is where people seek elective medical treatment in a different country to the one in which they live.[1] It is a practice that has been rising for several decades and is likely to continue to increase, made attractive by low-cost air fares and the use of the internet by medical providers in one country to market their services directly to patients in another.[2]

Outward medical tourism potentially creates a problem for health services in the home country, because patients may need post-surgery follow-up at home, and because of the risk of post-surgical complications. Treatment of complications due to outward medical tourism can be costly and made more complicated because full information about the initial surgery may be unavailable.

There is limited information on the frequency and type of complications arising from medical tourism. We know that globally, for cosmetic surgery tourism, wound infection and lack of wound healing are the most common complications reported.[3] We know that complications can be serious and may require treatment in intensive care, further surgery and extensive use of antibiotics.[3] There are reports of multiple organ failure due to sepsis from wound infection and death due to hypoxic brain injury and cardiac arrest.[4]

We do not know the scale of the problem that outward medical tourism presents to the UK National Health Service (NHS) in 2025. In 2012, Lunt *et al*[5] examined the implications for the NHS of inward and outward medical travel, including travel for elective surgery. It was reported that medical tourists spanned all ages and were spread across a range of socioeconomic groups. The motivations for seeking elective medical treatment outside the UK were explored qualitatively and found to be variable. Key motivations included availability because the desired procedure was not offered by the NHS, an individual not meeting NHS eligibility criteria, or NHS waiting times being very long. Another motivator was cost, because private treatment outside the UK was, or was thought to be, cheaper than private treatment within the UK. It appeared that medical tourists used informal networks to obtain information about treatment abroad and were not well informed about the risks or availability of aftercare by the NHS. Complications arising from medical tourism were found to require NHS treatment, incurring costs, although data from in-depth qualitative case studies suggested that metabolic/metabolic/bariatric surgery tourism had the potential to result in a saving to the NHS due to long-term reductions in healthcare resource use after surgery.

In 2010, data from the Office for National Statistics International Passenger Survey indicated that at least 63 000 UK residents travelled abroad for medical treatment.[6] It has been estimated that in 2022 at least 348 000 UK residents travelled abroad for medical treatment,[7] but this is likely to be an underestimation. In 2023, the British Obesity and Metabolic Surgery Society (BOMSS) expressed concern about rising numbers of people experiencing serious complications after metabolic/bariatric tourism,[8] and the British Association of Aesthetic Plastic Surgeons advises against travelling abroad for any type of surgery.[9] Additional UK-based studies have been published examining complications and associated costs to the NHS. A rapid review, examining all UK-based studies, would inform policy decisions and assist in providing information on potential risks for people considering travelling abroad for medical treatment.

The aim of this review was to answer the following primary research question:

1. What are the costs and benefits to the NHS of outward medical tourism for elective surgery?

Three secondary questions, reflecting the review's objectives, were considered:

1. What complications of outward medical tourism for elective surgery are treated in the UK by the NHS?
2. What are the costs to the NHS from treatment of complications and follow-up care due to outward medical tourism for elective surgery?
3. What benefits are there to the NHS from outward medical tourism for elective surgery?

METHODS

Design

In order to provide stakeholders with the required evidence in a timely and resource-efficient manner, we undertook a rapid review.[10] The review was conducted in line with best practice guidance for rapid reviews[11] and in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines.[12] The review was prospectively registered with Open Science Framework (OSF) Registries (https://osf.io/fpnb8/).

Patient and public involvement

The public involvement in this review was based on a 'top and tail' approach.[13] A public contributor (B-JI) attended and contributed to stakeholder meetings, protocol planning meetings, internal presentation of findings and discussions on dissemination. They provided constructive comments when establishing the review question and developing the eligibility criteria. They wrote the lay summary and provided helpful feedback on clarification of technical terms in the main report.

Search strategy and screening

The search strategy was developed and carried out by two reviewers with input from a third. MEDLINE (Ovid), Embase (Ovid), CINAHL, Scopus, the Cochrane Library and Proquest (theses) were searched on 19 November 2024, limited to studies published between 2012 and 19 November 2024. The previous review by Lunt *et al*[5] searched up until March 2012 and was used to identify eligible primary studies published before 2012. Overton and Open Alex were searched on 6 December 2024. Other grey literature sources were searched on 11 December 2024. The specific search strategy used for each database is available in online supplemental tables S1–S7.

All identified studies were uploaded to Endnote (Thomson Reuters, San Francisco, CA, USA). Two reviewers dual-screened 10% of titles and abstracts independently. Agreement exceeded the 80% agreement threshold set out in the protocol, so the remaining titles and abstracts were screened by the primary reviewer. Following this, 20% of all full texts were dual-screened and agreement exceeded the 80% threshold, so the remaining records were screened by the primary reviewer.

Study selection criteria

Quantitative or descriptive studies published in the English language, conducted in any NHS setting in the UK, describing cases of complications, costs or benefits

due to outward medical tourism for elective surgery were included. Studies from any publication, including peer-reviewed studies, preprints, conference abstracts, letters, grey literature (dissertations, academic, third sector and industry reports, government documents and policy statements) were considered for inclusion. Opinion pieces, editorials and minutes of meetings were excluded. We had initially planned to only include studies conducted in over-18s, but not all relevant studies reported age or included an age restriction, so we removed this criterion.

We excluded studies that described cases of emergency surgery, semi-urgent surgery and cancer treatment. Policy in the UK is clear that follow-up care will be offered following fertility treatment, whether received in the UK or abroad. Non-emergency follow-up care or revisions following dental tourism are not covered as a part of NHS dental treatment.[14] Fertility treatment and dental treatment abroad were therefore excluded. In common with Lunt *et al*,[5] transplant surgery tourism was also excluded. There is a separate body of literature that examines transplant surgery tourism, which has specific ethical dimensions. Studies that included complications following private surgery within the UK, or elective surgery conducted outside the UK but funded by the NHS, were excluded if data could not be disaggregated.

Outcomes and analysis

Data were extracted by a single reviewer and quality assured by a second reviewer. The primary outcomes were observed or calculated costs and savings to the NHS due to outward medical tourism for elective surgery. Secondary outcomes included type and frequency of elective surgery tourism, demographics, procedures, specific details of complications, treatment of complications, follow-up care provided and use of NHS resources.

Data were synthesised narratively. Data from case series and case reports were combined by type of initial surgery. Survey data were reported separately. Where possible, complications were graded using the Clavien–Dindo classification for postoperative surgical complications.[15] For cost analyses, the unadjusted costs were presented as reported. A mean per patient inflated figure for 2024 was calculated for each cost analysis, using the Bank of England's inflation calculator.[16] Where a cost year was not reported, we assumed the cost year to be the year before publication.

Quality appraisal and risk of bias

Study quality was assessed using the appropriate JBI critical appraisal tools[17] selected for each included study design (the Checklist for Case Series, Checklist for Case Reports and Checklist for Economic Evaluations). Critical appraisal was completed by two reviewers and checked by a third reviewer. Studies of all quality were included in synthesis. Certainty in the overall body of evidence was assessed using Grading of Recommendations Assessment, Development and Evaluation (GRADE)[18] for the primary outcome measures of costs and benefits.

RESULTS

Overview of the evidence base

The search strategy identified 3672 original records from database searches and a further 1804 records from grey literature or citation searching. After title and abstract screening, 90 full-text articles were selected for review. Of these, 38 reports which described 37 studies, published from 2007 to 2025 were eligible for inclusion (figure 1). Nineteen studies described complications due to metabolic/bariatric surgery tourism,[19–39] 17 due to cosmetic surgery tourism[40–55] and one due to ophthalmic surgery tourism.[56] No studies describing complications from other eligible elective surgery tourism, such as orthopaedic surgery, or 'gender reassignment' surgery were identified, although one study[40] appears to have classified gender affirmation surgery as cosmetic surgery. Studies were case series and case reports conducted in secondary or tertiary care sites in England (n=29),[19–27 30–45 49 51–54 56] Northern Ireland (n=4),[28 29 47 48] Scotland (n=1)[50] and Wales (n=1)[55] or were surveys of plastic surgeons working in London (n=1)[42] or anywhere in the UK (n=1).[46] Thirteen of the studies[22 23 27 29 33 40 44 45 48 50 51 53 55] included a cost analysis. No study reported on any savings due to outward medical tourism for elective surgery. A detailed summary of data extracted from each article can be found in online supplemental tables S8–10.

Quality of included studies and assessment of the overall body of evidence

The case reports were low to moderate in quality, with one high-quality report.[32] Low-quality case reports did not include complete demographics, medical history or post-intervention condition. The cost analyses and case series were low quality. This was primarily because almost all studies were retrospective, with data obtained from medical notes, which can be incomplete or wrongly coded. Most studies did not report on exclusions due to missing data, but there is evidence from two studies that 14% to 23% of potentially eligible cases were excluded for this reason.[19 44] Other studies reported that there was uncertainty in treatment costs due to missing notes[56] or an inability to calculate certain patient-specific costs.[50] This means that it is likely that the individual studies underestimate both complications arising from medical tourism for elective surgery and associated costs. Most studies included very limited demographic data and very limited previous relevant medical history. More of the evidence for cosmetic surgery tourism came from full peer-reviewed articles than for metabolic/bariatric surgery tourism, which was almost entirely drawn from conference abstracts or letters. Abstracts and letters lack full details on selection of patients and methods of analysis, and the reporting of outcomes was often unclear.

It was unclear whether all eligible cases were identified in most studies, although one[44] reported that six cases were excluded due to lack of follow-up and one[56] reported missing notes for one case. Five case series reporting on metabolic/bariatric surgery tourism

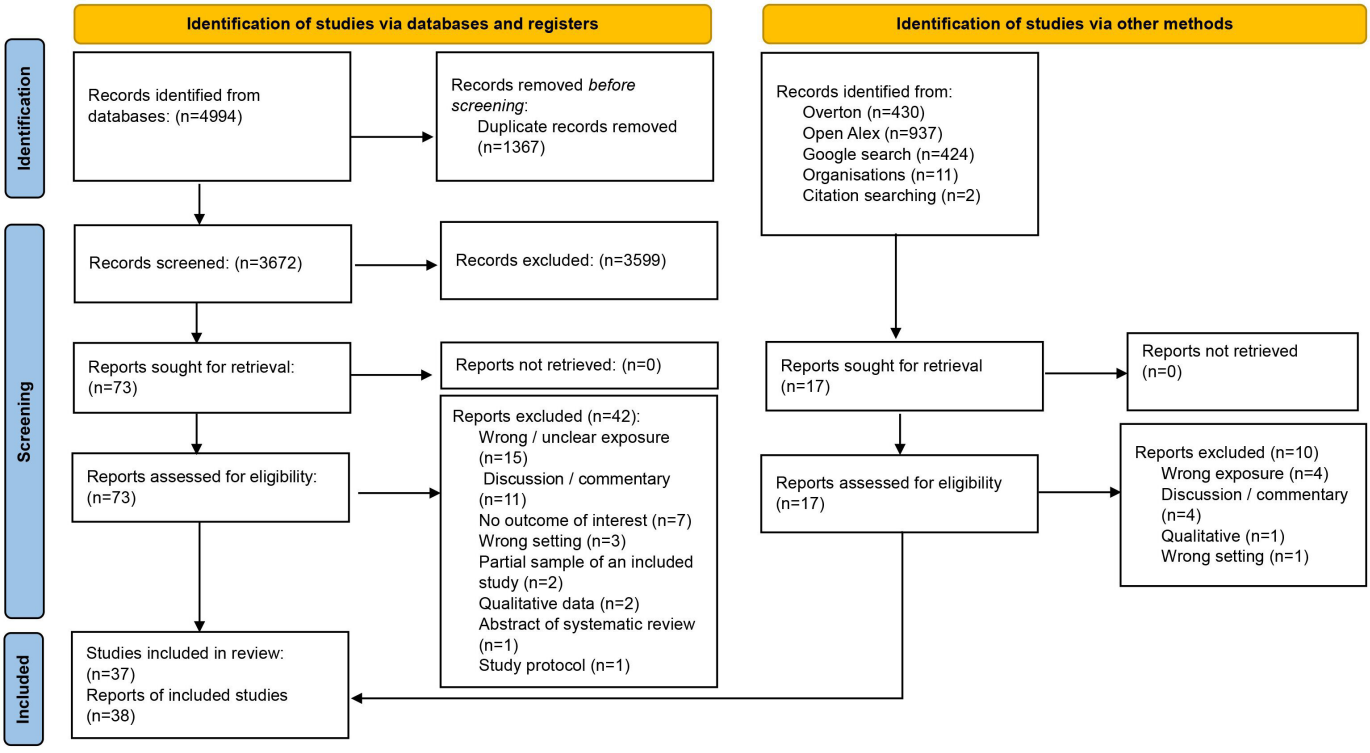

Figure 1 Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) flow diagram.

only included emergency, urgent or acute admissions.[19 22 23 28 34] This means that these studies did not include patients presenting with non-urgent complications or patients that only required outpatient treatment. In addition, not all cost analyses were clear about the exact costs included and no study reported whether discounting had been applied. There was some overlap in dates between two studies conducted in the same London hospital.[27 33] Although the two studies did not include identical outcomes, it is probable that some patients were included in both studies.

The results of the critical appraisal for each study can be found in online supplemental tables S11–13. Overall, the certainty of evidence for costs was categorised as very low. More detail on the findings of the assessment can be found in online supplemental table S14.

Patients and procedures

The case series and case reports included 655 patients treated by the NHS between 2011 and 2024 for postoperative complications arising from metabolic/bariatric (n=385), cosmetic (n=265) or ophthalmic (n=5) surgery tourism.

Twenty-five studies reported gender or sex and/or age, and one reported ethnicity. Table 1 shows combined patient characteristics. Eight metabolic/bariatric surgery studies reported body mass index (BMI) preoperatively (n=42) or at presentation with complications (n=58). Mean preoperative BMI was 44 (range 25–66) kg/m^2 and mean BMI on presentation was 37 (range 18–65) kg/m^2. Other medical history was reported inconsistently, if at all. Additional details are available in online supplemental tables S8–S10.

Twenty-three studies reported destination country. Overall, 29 destination countries were reported, across all continents. The most frequent country reported for metabolic/bariatric and cosmetic surgery was Turkey, with other countries accounting for no more than three to six cases (table 1).

Sixteen metabolic/bariatric surgery studies, involving 256 patients, reported on initial procedures. The most common procedure was sleeve gastrectomy (43%) (figure 2A). All cosmetic surgery studies reported on initial procedure. The most common single procedure was abdominoplasty (25%), although the most common site for surgery was the breast (39%) (figure 2B). For ophthalmic surgery, three patients underwent laser-assisted in situ keratomileusis (LASIK), one had a lens implant and one an iris colour implant.

Complications and treatment

There were no deaths reported by the included studies. It was possible to obtain or derive broad Clavien–Dindo classifications from 22 studies.[22 24 26 27 31–36 38–42 45 47–51 56] Overall, at least 196 patients (53%) experienced complications graded 3 or above.

For metabolic/bariatric surgery,12 studies that included 131 patients reported specific complications in enough detail to combine the data.[20 24 26 27 29 31 32 34–36 38 39] In many cases, symptoms rather than underlying diagnosis were described. For cosmetic surgery tourism, all

Table 1 Combined patient characteristics

Characteristic	Total	Initial type of procedure		
		Metabolic/bariatric surgery	Cosmetic surgery	Ophthalmic surgery
Total patients (n)	655	385	265	5
Gender/sex (n)	402	161	236	5
Women (n (%))	361 (90)	134 (83)	227 (96)	0
Men (n (%))	20 (5)	10 (6)	5 (2)	5 (100)
Transgender (n (%))	1 (0.4)	0	1 (0.4)	0
Not reported (n (%))	20 (5)	17 (11)	3 (1)	0
Age (n)	398	167	226	5
Mean (years)	38	40	37	38
Range (years) (n)	14–64 (181)	14–64 (104)	22–59 (77)	29–51 (5)
Destination countries (n)	353	130	218	5
Turkey (n (%))*	216 (61)	80 (62)	136 (62)	0
Other (n (%))†	126 (36)	50 (38)	71 (33)	5 (100)
Not reported (n (%))	11 (3)	0	11 (5)	0

*Two case series that did not report specific numbers indicated that Turkey was the most common destination.
†Belgium, Brazil, Columbia, Cyprus, Czech Republic, Dominican Republic, Dubai, Egypt, Estonia, France, Greece, India, Iran, Iraq, Latvia, Lithuania, Panama, Pakistan, Poland, Romania, South Korea, Spain, Syria, Thailand, Tunisia, Ukraine, USA, Venezuela, unspecified.

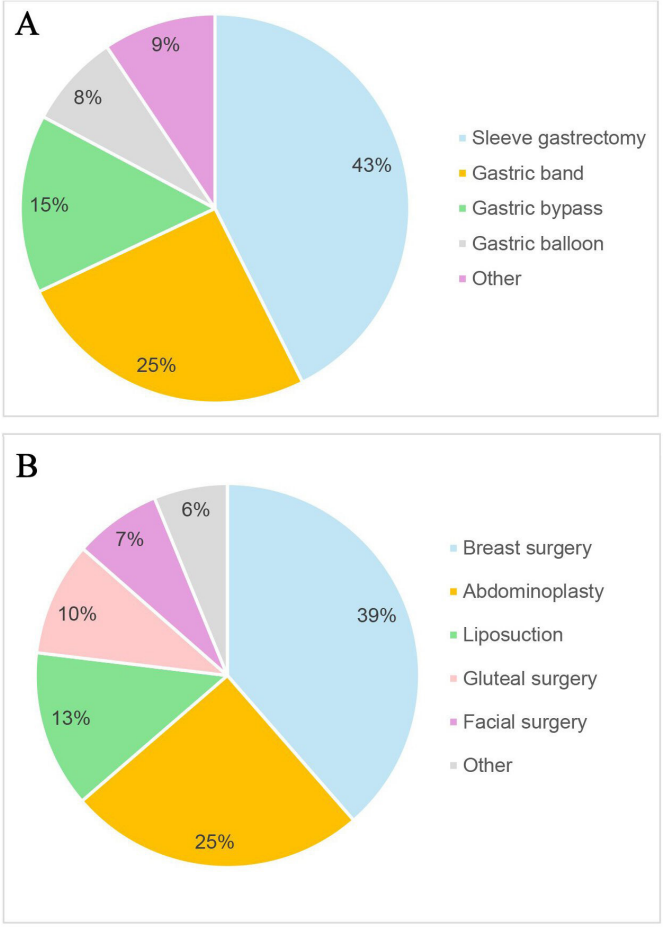

Figure 2 Reported procedures: (A) metabolic/bariatric surgery tourism procedures and (B) cosmetic surgery procedures.

studies reported specific complications in enough detail to combine the data (table 2).

Treatment of complications was not clearly recorded. For metabolic/bariatric surgery, treatment was reported by 13 studies,[20 21 24 26 27 31–35 38 39] although even in these, treatment was not recorded for 50% of cases. For cosmetic surgery, nine studies reported treatment (table 3).[40–42 45 47–50 53]

Costs to the NHS

Five studies reported costs for treatment of complications arising from metabolic/bariatric surgery tourism,[22 23 27 29 33] eight for treatment arising from cosmetic surgery tourism[40 44 45 48 50 51 53 55] and one for treatment arising from ophthalmic surgery tourism.[56] The studies collected data from 2006 to 2023.

Costs to the NHS from outward medical tourism for elective surgery ranged from £1058 to £19 549 per patient in 2024 prices. Table 4 shows the summary of reported costs from each study and calculated per patient costs in 2024. The certainty of evidence for costs is very low (online supplemental table S14). More detailed breakdowns of costs for some metabolic/bariatric surgery tourism and cosmetic surgery tourism studies are presented in online supplemental tables S8 and S9.

Resource use

Eight studies (n=159) reported length of hospital stay for inpatients due to treating complications from metabolic/bariatric surgery tourism.[19 22 23 28 32 34 35 38] The combined mean length of stay was 17.3 days, and the maximum reported stay was 45 days.[34] Nine studies (n=166) reported length of hospital stay arising from cosmetic surgery

Table 2 Complications due to outward medical tourism for elective surgery

Symptoms and diagnosis	Patients (n (%))
Clavien–Dindo classification (n=371)	
Grade 3 or above	196 (53)
Metabolic/bariatric surgery tourism (n=131)*	
Symptoms	
Abdominal pain	28 (21)
Vomiting/reflux	13 (10)
Malnutrition/nutrition failure	11 (8)
Unable to swallow	10 (8)
Weight regain	8 (6)
Reactive hypoglycaemia	1 (0.1)
Diagnosis	
Gastric leak	23 (17)
Gastric band erosion	7 (5)
Stricture/obstruction	5 (4)
Portal vein thrombosis	3 (2)
Small bowel ischaemia	2 (1)
Migrated gastric balloon	2 (1)
Internal hernia	1 (1)
Unspecified symptoms/diagnosis	21 (16)
Cosmetic surgery tourism (n=265)*	
Infection	119 (45)
Wound dehiscence	113 (43)
Haematoma, seroma or abscess	22 (8)
Necrosis	20 (8)
Pain	16 (6)
Implant exposure or rupture	6 (2)
Removal of drains	2 (0.1)
Other†	3 (0.1)
Unspecified	32 (12)
Ophthalmic surgery tourism (n=5)*	
Reduced sight	4 (80)
Diagnosis	
Infection	1 (20)
Keratitis	2 (40)
Flap striae within the cornea	1 (20)
Low grade uveitis	1 (20)

*Some patients had multiple complications recorded.
†Nerve injury, abdominal eschar, anaemia requiring transfusion.

Table 3 Treatment of complications associated with medical tourism for elective surgery

Treatment	Patients (n (%))
Metabolic/bariatric surgery (n=171)*	
Reversal/revision/conversion of procedure	71 (42)
Other surgical treatment†	23 (13)
Non-surgical treatment	3 (2)
Non-specified (excluding reversal/conversion)	85 (50)
Cosmetic surgery (n=169)*	
Antibiotics (oral or intravenous)	97 (57)
Surgical treatment, including removal of implants	49 (30)
Conservative treatment only (dressings, debridement in clinic, suture, drain removal)	41 (24)
Other‡	6 (4)
Not recorded	22 (13)
Ophthalmic surgery (n=5)*	
Surgery	3 (60)
Topical lubricant/steroids	3 (60)
Topical antibiotics	1 (20)

*Some patients were reported as receiving multiple treatments.
†Included surgical investigation, stent insertion and unspecified surgical treatment.
‡Ultrasound-guided aspiration, blood transfusion, investigation for pulmonary embolism.

tourism.[42 44 45 48–53] The combined mean length of stay was 5.9 days, and the maximum reported stay was 49 days.[53]

Other resources such as number of day cases, surgery time, clinic appointments and number and type of diagnostic tests were reported by no more than one to three studies. One metabolic/bariatric surgery tourism study[29] reported that 410 hours of dietetic time were required during the study period, although details as to why were not provided. Another[23] estimated that the overall time needed to treat complications equated to 110 elective metabolic/bariatric surgeries. A study conducted in a tertiary plastic and reconstructive surgery department[51] reported that the operative time incurred to treat complications from 21 cases of cosmetic surgery tourism was comparable to that needed to treat 40 patients in need of NHS treatment. For ophthalmic surgery tourism, over 50 outpatient appointments and four surgical procedures were reported in order to treat the five patients (online supplemental tables S8–S10).

Survey data

One survey[42] obtained responses from 35 consultant plastic surgeons working in the NHS, 60% of whom had seen a total of 50 patients with complications due to cosmetic surgery tourism between April and November 2006. A second survey[46] received responses from 203 consultant plastic surgeons, working in the NHS, 37% of whom had seen a total of 215 patients with complications or concerns due to cosmetic surgery tourism in 2007. The most common procedures that patients had received abroad in both surveys were breast augmentation/

Table 4 Costs due to medical surgery tourism for elective surgery

Study	Patients (n)	Cost year	Description of cost	Original cost as reported	Per patient cost in 2024*
Metabolic/bariatric surgery tourism					
Beynon *et al*[22]	15	2023	In-patient costs per patient between July 2022 and June 2023	£6857.14 (£600–£28 625)	£7030
Gould *et al*[27]	41	2018†	Total hospital costs between 2014 and 2019	£119 920	£3743
Hraishawi *et al*[29]	42	2022†	Total hospital costs between August 2016 and February 2023	£737 126	£19 549
Burki[23]	35	2022	Total hospital costs in 2022	£560 234	£17 829
Munoz *et al*[33]	32	2020†	Costs per metabolic/bariatric revision/ conversion procedure between April 2015 and April 2021	£4000–£7000	£4986–£8726
Cosmetic surgery tourism					
Ahari *et al*[40]	20	2022	Total hospital costs between September 2022 and September 2023	£31 170.80	£1736
Farid *et al*[44]	20	2021	Total hospital costs between September 2020 and September 2021	£63 803.54	£3876
Henry *et al*[45]	26	2020	Total hospital costs between 2015 and 2020	£152 946.00	£7334
Martin *et al*[48]	6	2018	Total hospital costs for the six cases	£23 976.82	£5114
Roberts *et al*[50]	81	2022	Total hospital costs for patients seen between 2019 and end of 2023	£755 559.68	£10 390
Sadr *et al*[51]	21	2017†	Total hospital cost between 2015 and 2017	£290 456.98	£18 139
Thacoor *et al*[53]	24	2018†‡	Total hospital costs for patients requiring surgical management between 2006 and 2018	$406 233.00	£16 218
Yoganthan *et al*[55]	5	2022†	Cost of non-life-threatening treatment per patient presenting over a 12-month period	£950.00	£1058
Ophthalmic surgery tourism					
Yip *et al*[56]	5	2017	Costs associated with treatment	£11 583	£3039

*From the Bank of England inflation calculator.
†Cost year not given, assumed to be the year before publication for calculation of cost in 2024.
‡Average sterling exchange rate for US$=£1.3356 (Office for National Statistics (ONS): https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/timeseries/auss/diop).

reduction and abdominoplasty. Other survey findings are available in online supplemental table S9.

DISCUSSION

This rapid review aimed to provide a descriptive summary of the costs and benefits to the NHS of outward medical tourism for elective surgery. However, we only found studies that related to metabolic/bariatric surgery, cosmetic surgery and ophthalmic surgery tourism and we did not identify any studies investigating benefits.

For the studies that reported demographic data, most patients were women (90%), with an average age of 38 (range 14–69) years. The most common destination for surgery was Turkey (61%). A wide number of procedures were described, but for metabolic/bariatric surgery, the most common type was sleeve gastrectomy (43%). For cosmetic surgery, the most common single procedure was abdominoplasty (25%), although there was also evidence that patients can undergo multiple procedures at the same time. Complications and treatment were not always well reported. Costs to the NHS ranged from £1058 to £19 549 per patient in 2024 prices, but the certainty of evidence for costs is very low.

Strengths and limitations of this rapid review and limitations of the available evidence

The strength of this rapid review is that it included a systematic and comprehensive search of the available literature, including searching the grey literature and citation searching. The review includes data from 655 patients who presented with complications due to medical tourism for elective surgery. However, not all outcomes were reported by all studies, so each outcome only includes a subset of patients. The limitations in the methods were that the searches were structured around medical tourism rather than surgical specialities, which means some specialities may have been missed or under-represented. Only one reviewer screened the majority of titles, abstracts and full texts, which meant some eligible studies may have been

excluded in error. However, a subset of records was dual-screened and prespecified agreement levels between reviewers were exceeded.

The main limitation of the review is that the evidence is limited to the cases that have been reported in the literature by researchers who collected data from single specialist units and hospitals, often from patients who presented as emergencies, or was collected from individual surgeons. There are areas of the UK, such as Wales and the South West of England, which are almost unrepresented. We did not identify any studies that related to other surgical specialities, such as orthopaedic surgery, and we did not identify any eligible studies conducted in primary care or that considered longer-term follow-up. Retrospective case series and case reports are at high risk of bias due to selection bias and missing information in those records. They can lack generalisability, but when synthesised, they do provide an indication of the type and severity of specific adverse outcomes arising from medical tourism for elective surgery.

The available evidence makes it difficult to make comparisons between metabolic/bariatric surgery tourism and cosmetic surgery tourism. The reported combined length of hospital stay for metabolic/bariatric surgery tourism patients was considerably longer than that reported for cosmetic surgery tourism (17 vs 6 days, respectively). However, studies reporting on length of stay for metabolic/bariatric surgery tourism tended to include only emergency or urgent cases, whereas cosmetic surgery tourism studies tended to include both emergency and non-emergency cases. We therefore urge caution in making any direct comparisons.

This review does not consider the social, psychological or economic impacts on patients who experience complications from travelling abroad for elective surgery.

Implications for policy and practice

Rectification surgery and follow-up care following elective care abroad place financial and material pressures on the NHS. It is likely that free at the point of delivery emergency care will continue to be provided to people who experience complications that arise from medical tourism for elective surgery. A UK-wide position is needed on where NHS responsibility lies regarding routine postoperative care and follow-up. Should patients be informed that responsibility for ongoing care lies with the original private provider? Would the position vary depending on the type of surgery?

People seeking medical treatment abroad should be informed of the risk of experiencing complications and made aware of what the NHS will be responsible for in terms of treating complications and any costs for non-emergency treatment for which they may become personally liable. It has been argued that NHS doctors have a duty to inform their patients of the risks associated with medical treatment abroad, to enable people to make an informed choice about whether to proceed. Consideration by Government is warranted about the value of requiring insurance to cover costs of potential complications for people going abroad for surgical procedures, although the extent to which insurance could mitigate these is currently unclear. The feasibility of recouping costs from surgical providers abroad could be explored.

Implications for future research

We still do not know how many UK residents travel abroad for elective surgery or how many people subsequently experience complications. In 2014, Lunt *et al*[5] advised that robust, reliable data about who is travelling, where they are travelling to and for which medical procedures are needed. Direct comparison of the short- or long-term health of people who travel abroad for elective surgery with those treated in the UK (NHS or privately) would allow for a better estimate of costs and benefits to the NHS. Data on the longer-term social and economic impact on patients are also lacking. Without this information, we cannot fully understand the levels of risk that people seeking surgery abroad are taking.

There is a need for a systematic approach to collecting data across the UK that includes other specialities such as orthopaedics. Population-level datasets such as the SAIL Databank in Wales, or the Clinical Practice Record Database in parts of England, may make this feasible. In addition, we did not identify any eligible studies that were conducted in primary care, so we do not know what the impact is on general practice and community-based services. However, there is evidence from Northern Ireland that people require follow-up in primary care after bariatric surgery conducted outside of Northern Ireland (either mainland UK or elsewhere) or privately within Northern Ireland.[57] In this study, 47 such patients from a primary care centre with a population of 11 372 were identified over a 7-year period. All patients required ongoing blood monitoring, with nine requiring treatment for wound infection. One patient had 15 general practitioner (GP) encounters and 28 practice nurse appointments. It is probable that a significant number of people who have had surgery abroad are seeking non-emergency follow-up care from their GPs elsewhere in the UK, and further research on this is needed. A prospective registry of cases may assist in quantifying the problem for both primary and secondary care.

Future studies should collect and report full demographic details including gender, ethnicity and socioeconomic status. The reporting of Clavien–Dindo classification is a useful way to compare severity of complications across different types of surgery.

CONCLUSION

Evidence from case series, case reports and surveys shows that outward medical tourism for metabolic/bariatric surgery, cosmetic surgery and ophthalmic surgery can result in serious complications that are treated at NHS specialist units in the UK. The studies identified in this review suggest women may be more likely to seek elective

surgery abroad, especially cosmetic surgery. Costs to the NHS ranged from £1058 to £19 549 per patient in 2024 prices, but the certainty of evidence for costs was very low. The highest costs were due to long stays in hospital and to surgical treatment, but it was unclear if all the relevant costs were identified in the majority of studies. Cost and resource use associated with outward medical tourism for elective surgery to GPs and other primary care services were not reported. We still do not know how many people resident in the UK go abroad for elective surgery or how many people subsequently experience complications. Without these data, we cannot fully understand the levels of risk that people seeking surgery abroad are taking. Awareness-raising campaigns and interventions are warranted to inform members of the public in the UK considering going abroad for surgery about the potential for complications. Those seeking medical treatment abroad should be made aware of which complications the NHS is responsible for treating, and costs for which the patient may be potentially personally liable, including non-emergency treatment.

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