



Research Article

Evaluation of Regional Anaesthesia Practice in Plastic Surgery: A Cross-sectional Study

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Introduction

Regional anaesthesia involves the administration of an anaesthetic agent directly into a peripheral nerve, effectively blocking pain transmission to prevent or alleviate pain. Unlike general anaesthesia, regional anaesthesia does not impact the patient's level of consciousness [1].

The benefits of utilizing neuraxial regional anesthesia techniques have long been recognized in obstetric and surgical settings. The third National Audit Project (NAP3) confirmed that more than 700,000 central neuraxial blocks are performed annually in the United Kingdom (Royal College of Anaesthetists, 2009), and the number of peripheral nerve blocks performed continues to rise each year [2].

Research has shown that patients undergoing various procedures can derive advantages from regional anesthesia. Positive impacts have been observed on postoperative respiratory and cardiovascular outcomes, 7-day survival rates, time to ambulation, hospital discharge, and postoperative pain management. The ability to provide effective analgesia and mitigate the surgical stress response is believed to underpin many of the benefits associated with regional anaesthesia [3].

For day surgery patients, local infiltration and nerve blocks offer excellent anaesthesia and pain relief. The utilization of

ultrasound guidance has expanded the role of regional anaesthesia in day surgery, allowing for more precise placement of local anaesthetics, reduced total dosage administered, and supporting the organization of dedicated regional anaesthesia operating lists. The implementation of a dedicated "block room" enhances efficiency and enables the verification of sufficient nerve blockade prior to the surgical procedure [4,5]. The primary aim of this study is to comprehensively evaluate the current practices surrounding the utilization of regional blocks in NHS hospitals and identifying the existing gaps and barriers to propose effective strategies and recommendations for enhancing the current practice.

Material and Methods

Our project's objectives were to evaluate the regional anaesthesia practice in the Buckinghamshire Trust's plastic surgery division and to identify methods to enhance the service in conjunction with the anaesthesia team. To get a complete picture of what was going on behind the figures, this retrospective study also included a questionnaire that anaesthesiologists and plastic surgeons filled out.

The study period was between 1/3/2022 and 23/5/2022 (12 weeks). The operative notes of all the patients who underwent emergency or elective plastic surgery were reviewed.

The criteria for suitable candidates for regional block were put by the consultant anaesthetists as follows:

- Age above 16

- Single surgical site (arm, forearm, leg, foot)
- No drug allergy
- No Pre-existing neuropathy
- No bleeding disorders
- Not on ant-coagulation
- No infection to the site of the block

Statistical Analysis

The data obtained from the theatre records and clinician survey was subjected to analysis using Microsoft Excel. Additionally, a quantitative analysis employing coding techniques was conducted. Similar data points were grouped together under specific codes to facilitate a more streamlined and effective analysis process.

Results

For 12 weeks, 1061 operations were performed by the plastic surgeons. Local cases (n = 742) were excluded leaving 319 cases. Of the 319, 102 patients were suitable candidates for regional block after applying the previously mentioned criteria. However only seven patients underwent surgery under regional block and the rest had general anaesthesia that could have been easily avoided (Figure 1).

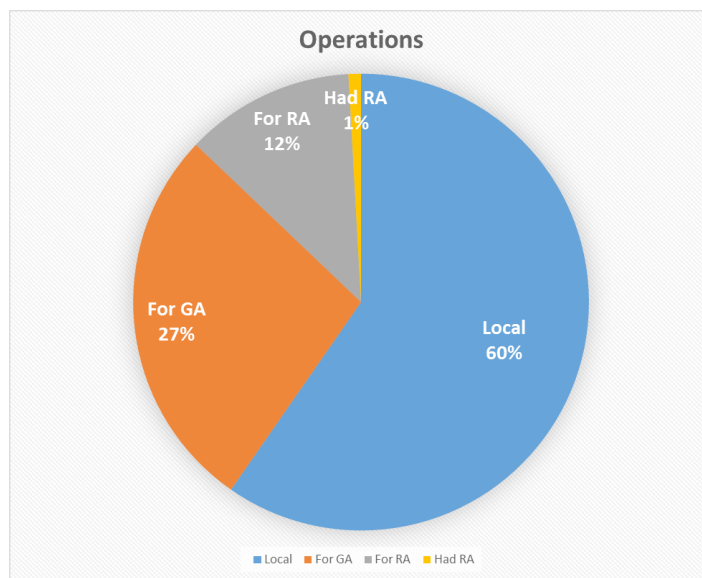


Figure 1: Pie chart showing the percentage of RA candidates who had GA

Plastic surgeons and anaesthetists with varying levels of training each answered an online questionnaire (Figure 2) to find out why general anaesthesia was clearly preferred over regional anaesthesia, despite the fact that this was not in the patients' best interests. The following inquiries were included in the questionnaire:

- Level of training
- Time required to administer GA or RA
- Factors that affect the decision
- Percentage of RA candidates who received GA
- Reasons for this proportion
- Recommendations

What is your training level?

Consultant

Registrar

SHO

FY1/2

SAS/LED

2. From your experience, what is the average time (in minutes) needed to do a regional block?

3. From your experience, what is the average time (in minutes) needed to give general anaesthesia?

4. What factors would make you chose to do a RA over a GA?

Type here...

5. What factors would make you chose to do a GA over a RA?

Type here...

6. In your opinion, what is the percentage of adult Plastic Surgery patients that are good candidates for regional anaesthesia but have their operations done under general anaesthesia instead?

Less than 10%

10-30%

31-60%

More than 60%

7. What is the main reason(s) behind this percentage?

Plastic surgeons ask for GA rather than RA

Anaesthetists prefer giving GA rather than RA

Patients refuse RA

Other

What are your recommendations to improve regional block in your practice?

Type here...

Figure 2: The questionnaire filled by clinicians about regional anaesthesia practice

The questionnaire was completed by 44 physicians, including 23 plastic surgeons and 21 anaesthesiologists. There were 21 consultants, 4 associate specialists, 9 registrars, and 10 senior house officers in terms of training level (Table 1) (Figure 3).

	Plastic surgeons	Anaesthetists	Clinicians
Consultant	6	15	21
SAS/LED	0	4	4
Registrar	8	1	9
SHO	9	1	10
Total	23	21	44

Table 1: Showing the distribution of questionnaire participants according to the training level



Figure 3: Pie chart showing the distribution of questionnaire participants according to the training level

The actual time needed to give GA was 23 min 59s, whereas RA was given in 41 minutes 09 seconds. Plastic surgeons estimated the time needed for GA to be 25 min 24 s while RA was 29 min 36 s. Anaesthetists estimated the time needed for GA to be 11 min 30 s and RA to be 16 min (Table 2) (Figure 4).

	Surgeons	Anaesthetists	Actual time
Average time for GA	25:24	11:30	23:59
Average time for RA	29:36	16:00	41:09

Table 2: Showing the time needed to give GA and RA

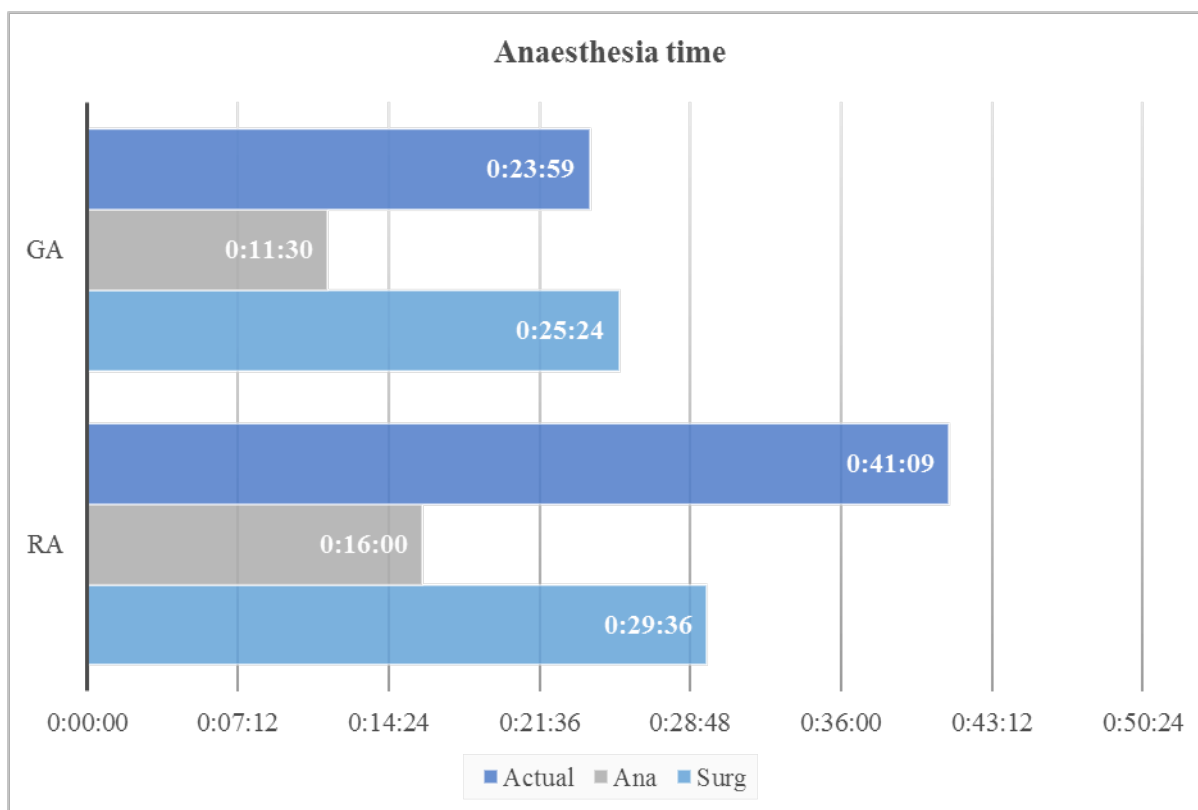


Figure 4: Chart showing the time needed for GA and RA

Factors that influence the choice of the type of anaesthesia were listed as follows:

- Patient choice
- Patient medical condition e.g. anti-coagulation and age
- Surgical indication (site and operation time)
- Logistics (time, bed availability)
- Surgeon and anaesthetist's expertise
- Pain control

The actual percentage of patients who were good candidates for RA but had GA was 88.8%. One respondent estimated a percentage of less than 10%. Twenty replies estimated the percentage between 10-30%. Nineteen replies estimated a percentage of more than 30 to 60%. Four replies estimated the percentage to be greater than 60% (Table 3).

	Surgeons	Anaesthetists	Total
Less than 10%	0	1	1
10-30%	11	9	20
31-60%	10	9	19
More than 60	2	2	4

Table 3: Showing replies regarding the estimated percentages of RA candidates who had GA

29 percent of the responders believed that this number was a result of the surgeon choosing GA over RA for their operations without receiving medical support for the choice. According to 37% of the responses, anaesthesiologists prefer to administer GA even though the patient qualifies for RA. 11.3% of the responses had alternative explanations, and 22.6% believed that patients had refused to have RA. (Table 4).

	Surgeons	Anaesthetists	Total
Surgeons ask for GA	11	7	18 (29%)
Anaesthetists prefer GA	12	11	23 (37%)
Patients want GA	5	9	14 (22.6%)
Others No time No space	1	6	7 (11.3%)

Table 4: Showing replies regarding the reasons behind giving GA to RA candidates

The recommendations were broken down into five primary categories (Figure 5), including:

- Protocols for regional blocks
- More training opportunities for anaesthetists on regional blocks
- A dedicated block room should be available in the hospital
- Anaesthetists and surgeons should communicate more effectively
- Patients should be informed about the advantages of regional blocks



Figure 5: Showing the access proposed to improve the RA service

Discussion

Forty-four clinicians participated in the questionnaire, almost half of them were consultants and the other half were trainees of different training levels, which can be considered a representative sample of the team involved in the process of regional block process.

The time taken to administer RA (41:09) was almost twice the time needed to administer GA (23:59). There was great underestimation of this time by surgeons (30 minutes) and anaesthetists (16 minutes).

It is surprising that the limited use of regional anaesthesia in the NHS despite its proven superiority over general anaesthesia in the right candidates regarding post-operative complications, survival, and time to ambulation, hospital discharge, and post-operative analgesia.

In 88.8% of the cases, the hazards of general anaesthesia could be easily avoided if there were suitable pathways and SOP, available regional block expertise, and proper communication between patients, surgeons and anaesthetists.

Most clinicians estimated the percentage of patients who are candidates for RA and have a GA as between 10-30%.

The reasons behind this percentage were distributed among surgeons, anaesthetists and patients with no dominance of one factor. There was no accurate documentation in the notes of the rationale behind the decision regarding the type of anaesthesia. Therefore, the data depended mainly on the opinions of the clinicians rather than the actual data.

After filtering the comments of the participants in the questionnaire, four main categories arose as recommendations (Figure 5):

1. Protocols and pathways

There are no guidelines in Buckinghamshire trust and many other trusts in the NHS on the pathways for patients going for an operation in terms of the type of anaesthesia to be selected. This

is left to the team opinion. Anaesthetists were not asked to justify their decisions based on the well-known protocols. This makes the decision very subjective and unpredictable.

Some of the recommendation regarding this aspect came as follows

- “Formal approved protocol for indications of RA to be used, and no one can argue that they prefer GA if there are no indications for it”
- “Standard protocol or pathway to allow suitable patients to automatically go into the RA”
- “If patients went for GA instead of RA. A reason must be stated in the op notes”

2. Training opportunities

It was clear that there was a training gap in regional blocks within the anaesthesia team. Some of the anaesthetists were comfortable giving RA, others were completely uncomfortable and felt the pressure of giving an RA that would not work. This pressure forced some anaesthetists to opt for the GA option as an easier and less stressful option.

There is no doubt that anaesthetists who feel incapable of giving a block should stick to GA; however, providing more training opportunities for consultants and trainees on regional blocks can improve our standards of care and provide the technical support needed by anaesthetists which was clearly stated in their answers.

The answers came as follows:

- “More workshops for RA which builds up confidence to use RA”
- “Training and support - many fear doing a block if they don't think it will work”
- “I need more exposure and practicing giving regional blocks. It is my own inexperience, which is a limiting factor in my practice.”
- “Personally, I feel much deskilled with some blocks and it is difficult to access time to upskill these in my current job plan.”

3. The logistics and time and space

Regional anaesthesia requires a longer time to work than general anaesthesia. To overcome this obstacle, especially in a busy acute trauma service, a separate room should be provided for anaesthetists to block them. The principle of a separate block room is widely known and was clearly mentioned in the guidelines of the Association of Anaesthetists

The answers in the questionnaire came as follows:

- “RA must be performed in a separate room to save time”
- “More availability. Dedicated block room”
- “Be able to perform the block in a different area so there is reduced turnaround time”

4. Communication and patient education

The three corners of communication are the patient, the surgeon, and the anaesthetist (Figure 6). Better communication is needed between the surgeons and anaesthetists in putting the anaesthesia plan of the plastic surgery list after discussion of the patient co-morbidities, general condition, expectations, preferences, details of the procedure, expected operation time, and the post-operative pain control. This discussion will make it much easier for the anaesthetists to make an informed decisions after the involvement of the patient in the decision-making process.

The patient being the centre of the process must be properly educated about the benefits and risks of both GA and RA. Information leaflets can be helpful in this regard. The leaflet can be given to the patient upon first presentation so that he/she has enough time to search for and decide which type of anaesthesia he/she will be most comfortable with when he comes on the day of his procedure.

The answers clearly mentioned the need for better communication among the whole team

- “Discussion between the anaesthetist and the surgeons being patient centric and as most anaesthetists are unaware of what the procedures might entail”
- “Communication between surgeons anaesthetists to organise the lists”
- “Early conversations with patient about benefits of RA and highlight the risks of GA”
- “Better patient counselling earlier to get the patient to buy into having RA. Often it seems that both surgeons and anaesthetists are happy with RA, but patients already have pre-conceptions about ‘being asleep’ and therefore says no to RA.”
- “Patients need to be told in preop and clinics that the case will be done under regional, and they are better prepared”
- “Patient education, surgeon's input as in patient education/ reassurance during consent process.”

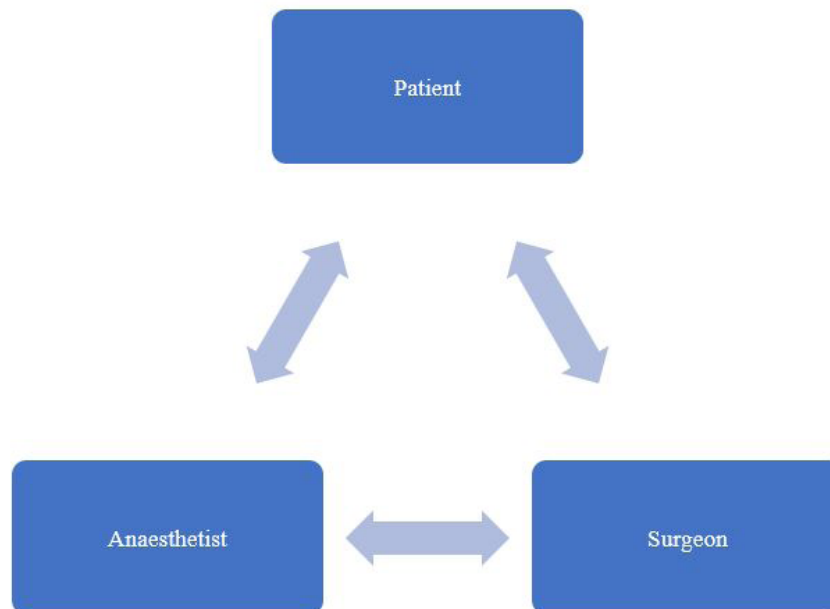


Figure 6: Showing anaesthesia decision making triangle

Limitation

- Limited data availability has forced the researchers to combine between quantitative and qualitative methods to obtain meaningful, and reproducible results and conclusions
- The study did not involve patients which is the third corner of the triangle
- This study reflects the practice in one NHS trust. Different circumstances and challenges that can be found in other trusts based on different human and non-human resources
- No evidence of similar studies in literature to compare our results to

Future Scope

Further multicentre studies are required to investigate the application of regional blocks on a broader scale within the United Kingdom. These studies aim to establish a more precise national guideline regarding the optimal utilization of blocks in both upper and lower limb surgeries.

Conclusion

There is great room for improvement regarding our regional anaesthesia service in the NHS that needs support from management, surgeons, anaesthetist and patients. Patients' interests should be the aim of any practice in the NHS, not saving time or effort.

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