Telemedicine and surgical coordination for Indigenous children from remote communities in northern Quebec

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Background: Pediatric patients from remote Indigenous communities in northern Quebec face substantial challenges accessing surgical care, often requiring lengthy air travel to urban hospitals. We sought to quantify time spent away from home for surgical care and explore telemedicine use during the perioperative period for this population.

Methods: We conducted a retrospective chart review of children from Nunavik and Terres-Cries-de-la-Baie-James who received surgical care at the Montreal Children's Hospital between 2011 and 2021. Dates of preoperative consultation, surgery, and postoperative follow-up were recorded, along with encounter modality.

Results: Of 914 patients identified, 40.9% required urgent surgery. For elective procedures, 59.1% of patients waited 14 days or longer for surgery after initial consultation. Postoperatively, 46.8% had follow-up appointments within 7 days of discharge, while 26.1% waited more than 14 days. Telemedicine was used in only 2.2% of elective consultations and 5.5% of follow-up appointments.

Conclusion: Wait times for surgery and initial follow-up appointments often exceeded 2 weeks and required return trips to Montréal, while telemedicine adoption remained limited across departments. Efforts to reduce wait times, increase telemedicine adoption, and enhance culturally safe practices could improve access and care experiences for patients from northern Quebec.

Contexte : La patientèle pédiatrique des communautés autochtones éloignées du Nord-du-Québec affronte d'importantes difficultés pour accéder aux soins chirurgicaux, ces derniers exigeant souvent de longs déplacements aériens vers les hôpitaux urbains. Nous avons cherché à quantifier le temps passé loin du domicile pour recevoir des soins chirurgicaux ainsi qu'à explorer l'utilisation de la télémédecine chez cette population durant la période périopératoire.

Méthodes : Nous avons procédé à une analyse rétrospective des dossiers médicaux d'enfants du Nunavik et des Terres-Cries-de-la-Baie-James ayant reçu des soins chirurgicaux à l'Hôpital de Montréal pour enfants entre 2011 et 2021. Les dates de la consultation préopératoire, de la chirurgie et du suivi postopératoire ont été consignées, de même que le mode de consultation.

Résultats : Parmi les 914 cas recensés, 40,9 % ont requis une chirurgie urgente. En ce qui concerne les interventions électives, l'attente entre la consultation initiale et l'opération a été de 14 jours ou plus pour 59,1 % des enfants. Après l'intervention, 46,8 % ont eu un rendez-vous de suivi dans les 7 jours suivant le congé, tandis que 26,1 % ont attendu plus de 14 jours. On a eu recours à la télémédecine pour seulement 2,2 % des consultations électives et 5,5 % des suivis.

Conclusion : L'attente pour la chirurgie et pour le suivi initial dépassait souvent les 2 semaines et nécessitait des déplacements additionnels à Montréal, alors que l'utilisation de la télémédecine demeurait limitée dans les divers services. Des efforts visant à réduire les délais, à accroître l'utilisation de la télémédecine et à améliorer la sécurité culturelle des pratiques pourraient améliorer tant l'accès aux soins que les expériences de soins de la patientèle du Nord-du-Québec.

Although Canada's publicly funded health care systems aim to provide equal coverage to all citizens, Indigenous Peoples face disproportionate obstacles in accessing health care services.[1] Remoteness has been identified as an important contributor to the challenges in accessing specialized health care in Indigenous communities.[2] In Quebec, a province with a

geographic area 3 times larger than France, a substantial proportion of the Indigenous population lives in northern regions. These patients are required to travel long distances by plane to southern urban centres to obtain access to specialized health services.

About 25% of children in Canada live more than 100 km from a hospital that offers pediatric surgical care.[3] These patients experience limited access to health care as a result of their geographic isolation, compared with other Canadian patients closer to urban centres.[4–6] Inadequate access to subspecialty surgery for children can impose hardship on families who are geographically remote or distant from tertiary pediatric hospitals.[7] Consequently, these barriers to access have been associated with worse outcomes and more complex surgeries, resulting in a poorer prognosis.[6,8] Rural communities also experience higher rates of morbidity and mortality, and children often have higher rates of medical complexity in part owing to disparities in accessible health care, as well as socioeconomic barriers to care.[9,10]

Nunavik, a region in northern Quebec, covers one-third of the province's surface area and is home to a large Inuit community of about 12 000 people.[11] South of Nunavik lies Terres-Cries-de-la-Baie-James, which is home to around 21 000 members of the Eeyou Istchee Cree Nation.[12] Under a provincial government mandate, the Montreal Children's Hospital (MCH), a tertiary-level pediatric hospital, provides medical and surgical care to pediatric patients from these 2 communities.[13]

The total distance between Nunavik's largest village (Kuujjuaq) and Montréal is 1443 km (897 miles). The distance between the Baie-James region and Montréal is 1096 km (681 miles).[14] Given the extensive distance between these communities and urban tertiary care centres, combined with the lack of developed road systems, air travel is the predominant means of accessing specialized care.

Geographic isolation poses substantial challenges to health care access for Indigenous communities in northern Quebec, particularly in the Nunavik region. The remote nature of Nunavik, characterized by vast distances and harsh arctic conditions, severely limits transportation options and creates barriers to timely medical care.[14,15] Many communities lack year-round road access, relying instead on air travel for medical evacuations and specialist consultations.[1] This isolation means that most health centres in the region are primarily staffed by nurses and community health workers, with limited resources to perform advanced procedures.[14]

As a result, patients often need to be transported to urban centres for specialized care, a process that can be delayed by extreme weather and limited flight availability.[16] Patients may miss school or other community events to travel for necessary care, family units are disrupted, and caregivers may suffer the consequences of prolonged work absenteeism.[2] The situation is especially difficult for pediatric patients, as their caregivers must accompany them, potentially leading to financial hardship, loneliness, emotional stress, and heightened anxiety and fear, all of which can impede recovery.[17]

Medical displacement may result in substantial direct and indirect expenses, as highlighted in the Canadian Institute for Health Information's Rural Health Systems Model.[18] In recognition of the burden caused by the need to travel to access health care, concerted efforts have been made to coordinate care effectively and minimize the need for travel for this patient population whenever possible. However, the fundamental challenges posed by geographic isolation continue to affect health care delivery and access for Indigenous communities in northern Quebec.[1,14,15]

In this hospital-wide study, we sought to quantify the length of time away from home for patients from northern Quebec who sought tertiary pediatric surgical care across all surgical specialties within the Department of Pediatric Surgery at the MCH. Further, we explored how a cultural safety framework could be applied within this context, with the aim of improving health care experiences and outcomes for Indigenous patients.

Methods

Theoretical framework

The cultural safety framework[19,20] formed the foundation of our research approach, recognizing the unique health care challenges faced by Indigenous Peoples. This framework emphasizes the importance of providing culturally appropriate and respectful care to Indigenous populations, addressing power imbalances and systemic racism within health care systems.

The cultural safety framework is rooted in the recognition of Indigenous rights, including the right to self-determination, access to traditional and cultural healing practices, and equitable health care services.[19,20] It aims to foster an understanding of Indigenous histories and cultures among health care providers, thereby improving communication, trust, and health outcomes for Indigenous communities. Implementation of cultural safety involves comprehensive training for health care professionals, integration of Indigenous perspectives into health care policies, and development of culturally safe practices that validate the cultural identities of Indigenous patients.

The framework guided the analyses of the research, focusing on 4 major themes: cultural safety, addressing systemic racism, integration with telemedicine, and community engagement. The cultural safety theme focuses on addressing cultural and linguistic barriers to ensure health care services are culturally appropriate and respectful of Indigenous traditions and values. Addressing systemic racism encompasses recognizing and addressing systemic racism within health care systems to create a more

equitable health care environment for Indigenous communities. Integration with telemedicine involves ensuring that digital health solutions are designed and delivered in ways that are culturally sensitive and accessible to Indigenous populations, addressing geographic isolation experienced by northern communities. Finally, community engagement focuses on encouraging community involvement in health care planning and delivery, emphasizing the importance of including Indigenous communities in discussions about improving access to care.

Study design

We conducted a retrospective chart review of a consecutive cohort of pediatric patients (aged < 18 yr) residing in Nunavik or Terres-Cries-de-la-Baie-James who underwent surgical intervention at the MCH between Jan. 1, 2011, and Dec. 31, 2021.We included patients from the departments of cardiac surgery, general surgery, oral maxillofacial surgery, neurosurgery, ophthalmology, orthopedic surgery, otorhinolaryngology, plastic surgery, and urology. We excluded children who were born at the MCH who underwent surgery before discharge.

The primary objective of this study was to determine the perioperative timeline for this population, specifically the time between elective in-person consultation and surgery, the time between hospital discharge and first follow-up appointment, and the mode of contact for initial elective consultation and first postoperative follow-up appointment. Our secondary objective was to examine the degree of patient care coordination among patients requiring the involvement of multiple surgical services, by identifying the rate of combined versus metachronous surgeries for patients requiring multiple interventions over a year.

Study setting

Two approaches exist to scheduling patients from northern Quebec at the MCH: having patients undergo surgery soon after their initial surgical consultation or having them return home before the scheduled date. As per local hospital policy, if the period from initial surgical consultation to date of surgery or from date of hospital discharge to first follow-up appointment exceeds 2 weeks, patients from these northern communities are provided with comprehensive air transportation services to facilitate round-trip journeys to and from their respective communities.[21] If the periods described above are less than 2 weeks, patients are requested to stay in Montréal until the date of surgery or first follow-up appointment. A recent publication evaluating the pre- and postoperative follow-up times for patients from these communities revealed remediable delays in the perioperative timeline that resulted in unnecessarily prolonged stays in Montréal.[22]

Data collection

We identified patients by their postal code using the MCH operative booking software (Système d'information sur les mécanismes d'accès aux services spécialisés).

We collected the following information from electronic patient medical charts via the Open Architecture Clinical Information System: dates of preoperative consultation, surgery, and postoperative follow-up; encounter modality; American Society of Anesthesiologists (ASA) Physical Status Classification System score; surgical acuity (elective v. urgent); and postoperative trajectory (day surgery v. postoperative admission).

Outcomes

We recorded the length of time between initial consultation to surgery and from hospital discharge to first postoperative visit. Time from consultation to surgery was applicable only for elective procedures. We identified patients who underwent another surgery with 2 different specialists under the same anesthetic session or within 1 year of their initial intervention, classifying these as combined or metachronous surgeries, respectively.

Statistical analysis

We performed a descriptive analysis, classifying procedures by specialty and as urgent or elective. The encounter modality for initial surgical consultation and postoperative follow-up visit was recorded for comparison between specialties. We divided patients into subgroups based on their wait times (< 7 d, 7 to 14 d, and > 14 d). We used SPSS for our analysis.

Community and patient partner engagement

This study was conceived and developed in partnership with Indigenous community representatives and patient partners from Nunavik and Terres-Cries-de-la-Baie-James. We identified the research priorities collaboratively, and Indigenous partners were engaged throughout the design, data interpretation, and contextualization of findings, in accordance with ownership, control, access, and possession (OCAP) principles.[23] We also sought input from patient housing facility staff (Ullivik and Cree Patient Services) to ensure the research reflected the lived experience of families. This manuscript reports a retrospective chart review, which is part of a broader, ongoing partnership that includes qualitative research with Indigenous patients and health care providers, the results of which have informed our interpretation and recommendations.

Ethics approval

Ethics approval for this study was obtained from the McGill University Health Centre Research Ethics Board (no. F9H-112201). The study adhered to the OCAP principles, which ensure that First Nations people maintain ownership and control over their own information and data.[23] These principles guide how First Nations data should be collected, protected, used, or shared.

Table 1: Characteristics of pediatric patients from Terres-Cries-de-la-Baie-James and Nunavik who underwent surgery at the Montreal Children's Hospital between 2011 and 2021

Variable	No. (%) of patients by surgical acuity		
	Elective *n* = 540	Urgent *n* = 374	Entire cohort *n* = 914
Age, yr, mean ± SD	6.25 ± 4.75	9.38 ± 5.35	7.57 ± 5.30
Sex, female	209 (38.7)	156 (41.7)	365 (39.9)
ASA Physical Status Classification System score			
ASA 1	271 (50.2)	268 (71.7)	539 (59.0)
ASA 2	212 (39.3)	88 (23.5)	300 (32.8)
ASA 3	55 (10.2)	15 (4.0)	70 (7.7)
ASA 4	2 (0.3)	3 (0.8)	5 (0.5)
Specialty			
Cardiac surgery	17 (3.1)	2 (0.5)	19 (2.1)
General surgery	64 (11.9)	236 (63.1)	300 (32.8)
Oral maxillofacial surgery	86 (15.9)	2 (0.5)	88 (9.6)
Neurosurgery	13 (2.4)	2 (0.5)	15 (1.6)
Ophthalmology	67 (12.4)	6 (1.6)	73 (8.0)
Orthopedic surgery	6 (1.1)	75 (20.1)	81 (8.9)
Otorhinolaryngology	199 (36.9)	31 (8.3)	230 (25.2)
Plastic surgery	57 (10.6)	20 (5.3)	77 (8.4)
Urology	31 (5.7)	0 (0.0)	31 (3.4)

ASA = American Society of Anesthesiologists; SD = standard deviation.

Results

Our patient cohort consisted of 914 patients, of whom 374 (40.9%) had urgent surgery and 540 (59.1%) had an elective procedure. As shown in Table 1, the mean age of patients in the cohort was 7.57 (standard deviation 5.3) years and 549 patients (60.1%) were male. Most children (*n* = 839, 91.8%) had an ASA score of 1 or 2. In terms of surgical volume distribution across specialties, 300 patients (32.8%) were seen in general surgery, 230 (25.2%) in otorhinolaryngology, 88 (9.6%) in oral maxillofacial surgery, 81 (8.9%) in orthopedic surgery, 77 (8.4%) in plastic surgery, 73 (8.0%) in ophthalmology, 31 (3.4%) in urology, 19 (2.1%) in cardiac surgery, and 15 (1.6%) in neurosurgery.

Elective consultations

Overall, the primary mode of contact for initial elective consultation was in person, with the use of telemedicine noted in 12 consultations (2.2%). As seen in Figure 1, general surgery had the highest proportion of initial telemedicine-based consultations (*n* = 6, 9.4%) followed by ophthalmology (*n* = 3, 4.5%) and urology (*n* = 2, 6.5%). In cardiac surgery, oral maxillofacial surgery, neurosurgery, orthopedic surgery, and plastic surgery, initial consultations were exclusively conducted in person.

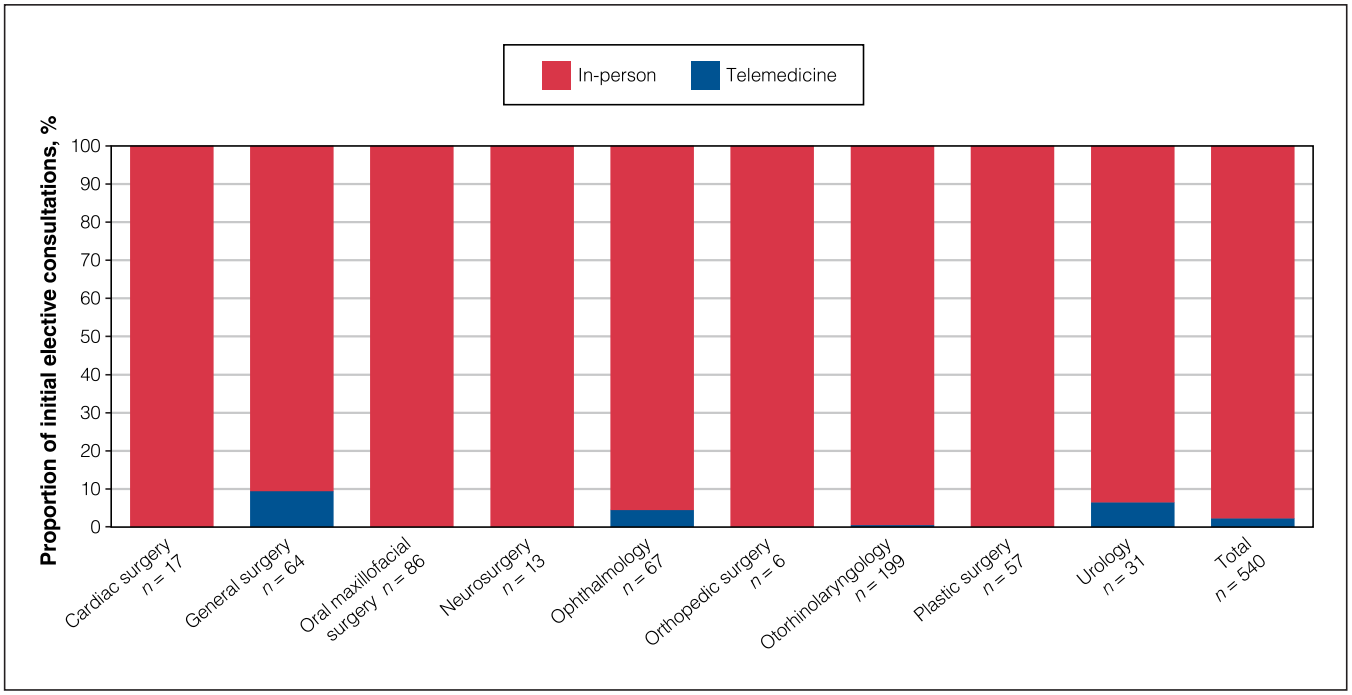

Fig. 1. Encounter modality for initial consultation leading to elective surgery among pediatric patients from northern Quebec, 2011 to 2021.

For patients undergoing an elective procedure, 177 patients (32.8%) had a wait time of less than 7 days, 44 patients (8.1%) waited between 7 and 14 days, and 319 patients (59.1%) waited longer than 14 days for surgery. The distribution of time between initial consultation to surgery is depicted in Figure 2. Orthopedic (100%), general (71.9%), and cardiac (52.9%) surgery were the specialties in which more than 50% of patients were operated on within 2 weeks of their initial consultation.

Postoperative follow-up

We included postoperative data from 738 patients. We excluded 176 patients from this analysis. Of these, 45 had follow-up planned in person in their home communities, 91 had follow-up at a clinic outside the MCH, and 40 had no tertiary care follow-up arranged after surgery.

A total of 697 (94.4%) had their first follow-up appointment conducted in person. General surgery (n = 21, 7.0%), orthopedic surgery (n = 8, 13.3%), and ophthalmology (n = 4, 6.6%) had the highest usage of telemedicine for the first follow-up appointment (Figure 3).

Postoperatively, 326 patients (46.8%) had a waiting period of less than 7 days between discharge and first follow-up visit, 189 patients (27.1%) waited between 7 and 14 days, and 182 patients (26.1%) waited longer than 14 days (Figure 4). General surgery (94.6%), cardiac surgery (94.4%), plastic surgery (87.9%), oral maxillofacial surgery (67.9%), orthopedic surgery (65.9%), and otorhinolaryngology (53.7%) were specialties in which more than 50% of patients had a follow-up appointment within 2 weeks of hospital discharge.

Combined and metachronous surgeries

Thirty-one patients underwent combined surgeries, involving 62 procedures (Figure 5). These most frequently involved otorhinolaryngology (n = 23, 37.1%), oral maxillofacial surgery (n = 16, 25.8%), and plastic surgery (n = 14, 22.6%). Twelve patients underwent metachronous surgeries. Similarly, these most frequently involved otorhinolaryngology (n = 9, 26.5%), oral maxillofacial surgery (n = 8, 23.5%), and plastic surgery (n = 4, 11.8%).

Discussion

This study characterizes the perioperative timeline and use of telemedicine among pediatric surgical patients from northern Quebec. Over the study period, a total of 914 patients from northern Quebec underwent surgical procedures at the MCH, averaging 83.1 cases per year. Most children were relatively healthy, with ASA 1 or 2 classifications. General surgery and otorhinolaryngology handled more than half the patients, but all surgical divisions were involved, highlighting the institution-wide responsibility for Indigenous patient care.

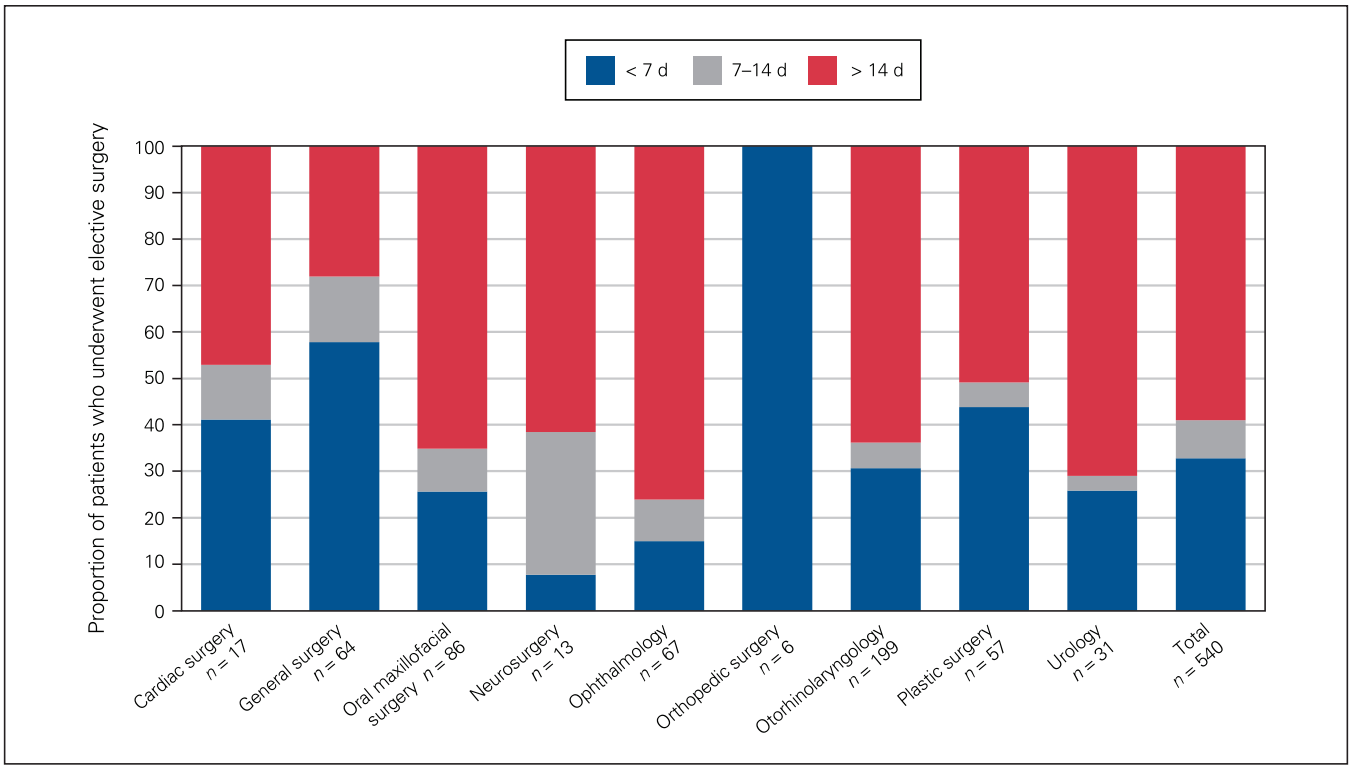

Fig. 2. Wait times from initial consultation to elective surgery among pediatric patients from northern Quebec, 2011 to 2021.

Our results indicated that 59% of patients were operated on more than 14 days after their initial surgical consultation. The threshold of 2 weeks was set for assessment in our study as it related to an institutional policy from the Ullivik Inuit and Cree patient services.[21] The policy states that, should a patient's expected length of time in Montréal before or following surgery extend beyond 2 weeks, they will be provided with transportation services to return to

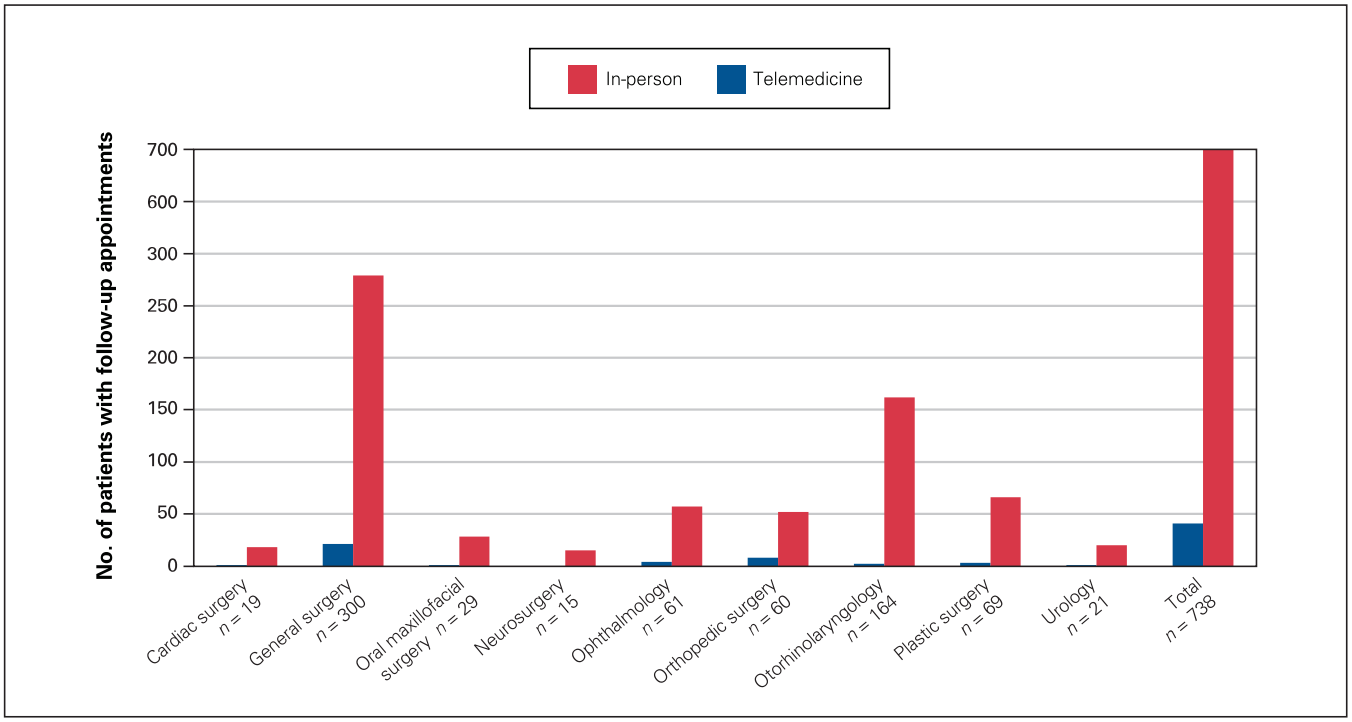

Fig. 3. Encounter modality for first postoperative follow-up appointment among pediatric patients from northern Quebec, 2011 to 2021.

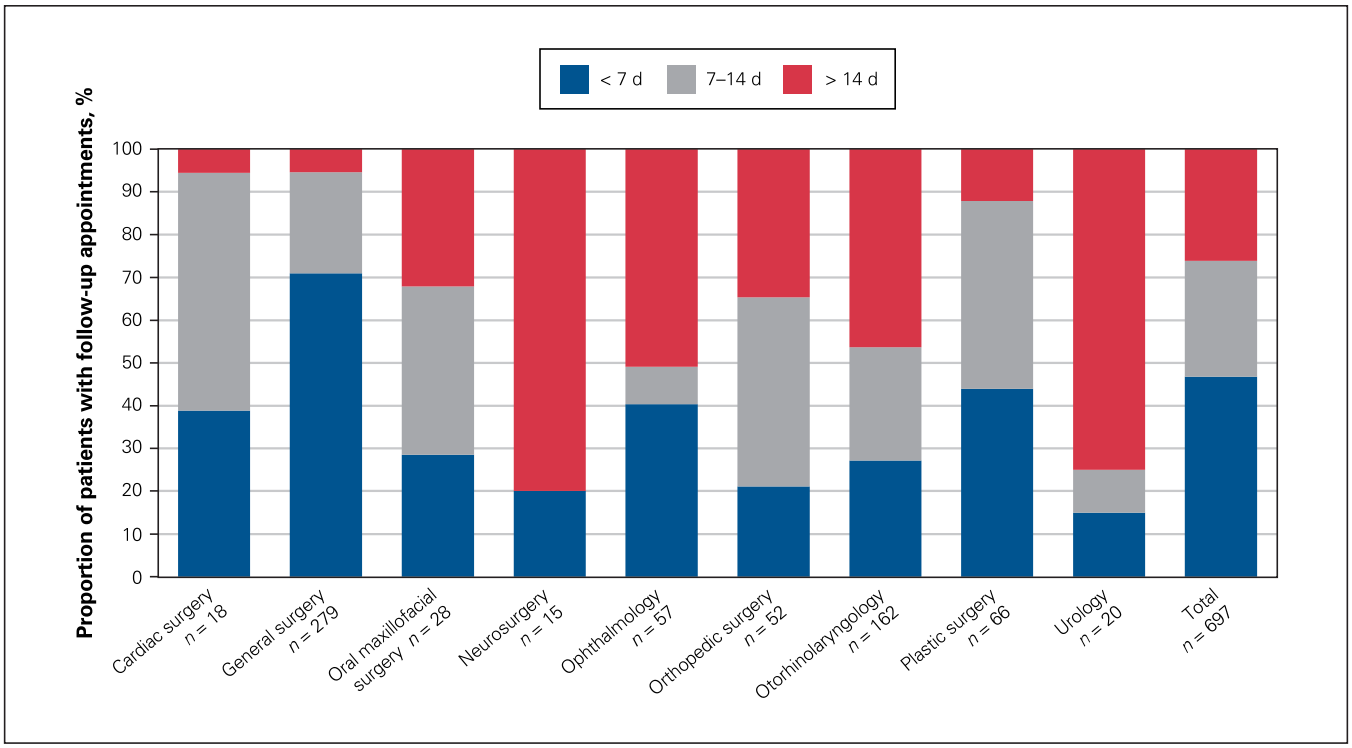

Fig. 4. Wait times from hospital discharge to first follow-up appointment, performed in person, among pediatric patients from northern Quebec, 2011 to 2021.

their respective communities. These families must travel to Montréal at least once more, either for surgery or their initial postoperative visit. This commute back and forth to these remote communities is particularly challenging, given long distances and inclement weather. As a result, families from these regions are often required to remain in Montréal for 2 to 4 weeks per surgical episode, with actual time away sometimes extended further by travel disruptions. Air Inuit, the primary commercial airline serving northern Quebec, experiences frequent operational disruptions, with recent data showing delay rates of 28% to 33% and multiple daily cancellations during periods of service interruption in 2025.[24] Of the remaining 41% of patients in the cohort, 177 (33%) patients were operated on within 7 days and 8.1% of patients had elective surgery between 7 and 14 days from their initial surgical consultation. Based on these perioperative timelines and local travel logistics, families from Nunavik and Terres-Cries-de-la-Baie-James typically spent an estimated 2 to 4 weeks away from their communities for elective surgical care at the MCH. This duration includes time before surgery (often up to 2 weeks), the perioperative period, and the postoperative period (up to 2 weeks after discharge, depending on the timing of follow-up and travel arrangements). Delays due to flight availability, cancellations, and statutory holidays are common and can further extend the stay.[17,25] In contrast, urban patients generally attend single-day appointments for consultation, surgery, and follow-up, spread out over several months, and do not experience prolonged displacement. These estimates likely understate the true duration, as hospital visits were used as a proxy for time away, and additional time is often needed for travel coordination and unexpected delays.

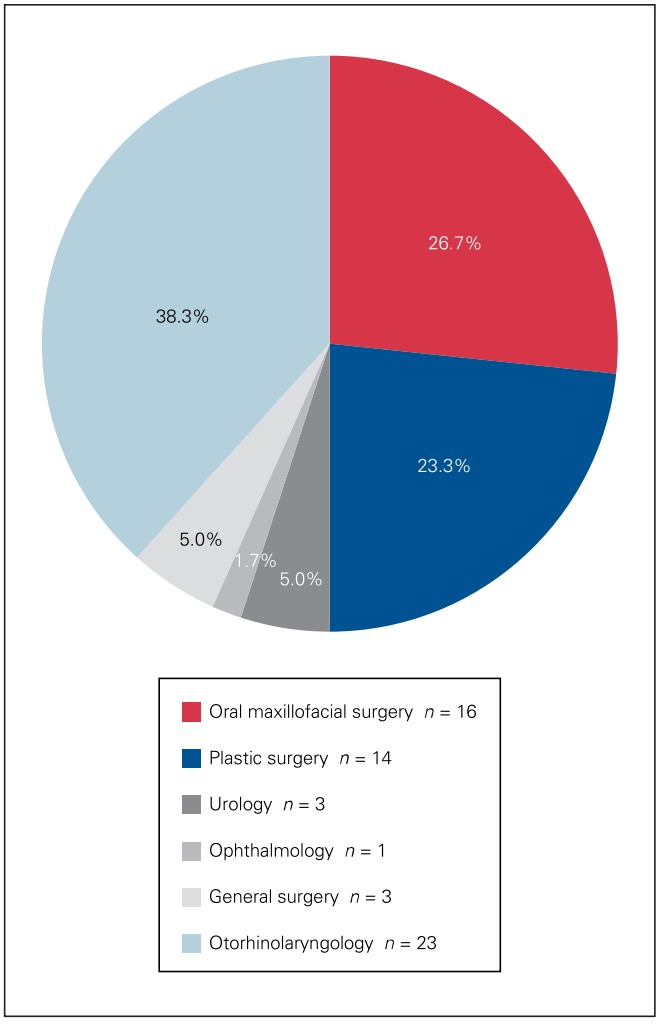

Fig. 5. Combined surgeries by specialty among pediatric patients from northern Quebec, 2011 to 2021.

Shortening the wait period between elective consultation and surgery to 7 days or less minimizes patient travel for surgery and reduces time spent away from home. It was beyond the scope of this study to evaluate the reasons for which surgical operations were delayed past 7 days. Although the reasons for postponement may vary by specialty, clinically, they may be related to the need for additional preoperative workup or optimization upon a patient's arrival in Montréal. Future work should identify causes of avoidable delays, such as imaging wait times or limited access to in-hospital subspecialty consultants, to improve coordination and access to the operating room.

We also examined the length of time between hospital discharge and the initial postoperative visit for both elective and urgent surgeries. We found that 326 patients (46.8%) were seen within 7 days of discharge, 189 patients (27.1%) were seen within 7 to 14 days, with the remaining 26.1% seen beyond 2 weeks. These data should be interpreted with caution as reasons for a postoperative visit beyond 2 weeks may be related to social or clinical factors, such as family preference or a higher detection rate of complications later in the postoperative trajectory. Regardless, given the distance and difficulty associated with a reliable medical transfer to and from northern Quebec, clinicians must strike a balance between safety and unnecessary prolongation of the family's stay in Montréal. In keeping with the principles of shared decision-making, clinicians and families should make an informed decision regarding whether patients should stay in Montréal or return home based on personal factors, relevant clinical information, and the institutional complication rate. A recent study by Hguig and colleagues[22] demonstrated a 10-year complication rate of 1.5% for urgent surgeries involving children from northern Quebec within the Division of Pediatric General Surgery at the MCH. Given this low rate of complications, telemedicine offers a potential safe alternative that limits the degree of medical displacement for surgical care.

Across all specialties, telemedicine was rarely used for either preoperative consultation or postoperative follow-up. Only 12 preoperative consults for elective surgery (2.2%) and 41 postoperative visits (5.6%) were conducted using telemedicine. This correlates with findings in the

literature regarding the low usage rate of telemedicine for surgical care of Indigenous Peoples.[26] Several studies have attempted to address reasons for the lack of use of this modality in health care settings. Problems with broadband Internet access, a lack of technical skills associated with operation of telehealth equipment, and a high failure-to-attend rate have all been implicated.[27–29] One major success in the Canadian landscape is the Keewaytinook Okimakanak eHealth Telemedicine Service, which provides telehealth services to Indigenous communities across Ontario.[30,31] The service model has been developed by community leaders with First Nations requirements at the forefront and with the health priorities of local communities in mind.[31]

Successful telemedicine programs have leveraged cultural and spiritual elements, acknowledged local beliefs and traditions, and included appropriate community engagement.[28] Although providing patient encounters through telemedicine may not be suitable in all cases — given patient preference, clinical or cultural appropriateness, or safety concerns — there is room for growth in the use of telehealth in this population. A one-size-fits-all approach is not suitable, and feasibility should be assessed by patients, families, and health care practitioners in each surgical specialty.

The low adoption of telemedicine observed in this study may be partially attributed to a lack of cultural safety considerations in its implementation, as has been noted in the literature.[26–28,32] Culturally safe telemedicine practices for Indigenous communities should include options for interpretation services, visual aids that reflect Indigenous cultures, and flexibility in scheduling to accommodate traditional activities.[33,34] Additionally, involving Indigenous health care workers and community leaders in the design and delivery of telemedicine services could increase trust and adoption rates.[35]

Lastly, our study examined a subgroup of patients that required surgery with more than 1 specialty. Patients were classified as having either a combined surgery, when all interventions occurred under the same general anesthetic, or metachronous surgery, when more than 1 general anesthetic was needed within a year of the initial intervention. Thirty-one patients had combined surgeries, whereas 12 patients had metachronous surgeries. Oral maxillofacial surgery, plastic surgery, and otorhinolaryngology were involved in most combined (88%) and metachronous (64%) surgeries. Our study did not allow us to assess if metachronous surgeries were amenable to combined interventions (i.e., if both surgical conditions were present at the time of the initial surgery and if the surgeries could be safely combined). Although low in volume, combined interventions are a marker of careful preoperative planning and excellent institutional coordination. When feasible, they can reduce the amount of travelling required for care and improve resource utilization in the perioperative setting.

Several steps could be taken to address the challenges identified in this study through a cultural safety lens. Providing cultural safety training for all health care staff involved in the care of patients from northern Quebec could improve patient–provider interactions and reduce miscommunication.[36] Creating dedicated spaces within the hospital that reflect Indigenous cultures and allow for traditional healing practices could help patients feel more comfortable during their stay.[37] Finally, developing partnerships with Indigenous communities to codesign care pathways and follow-up protocols could lead to more culturally appropriate and effective care delivery models.[38]

Applying a cultural safety framework to this context is crucial for improving health care experiences and outcomes for Indigenous patients from northern Quebec. Cultural safety goes beyond cultural awareness or sensitivity, requiring health care providers to examine their own cultural identities and biases that may affect patient care.[39,40] In the surgical setting, cultural safety could involve ensuring that preoperative education and postoperative instructions are delivered in a culturally appropriate manner, respecting Indigenous healing practices alongside Western medicine, and involving family members in care decisions as per community norms.[25]

In addition to geographic barriers, cultural differences can affect the quality of health care received by Indigenous patients. Cultural safety is an approach that requires health care professionals to examine themselves and the potential impact of their own culture on clinical interactions.[19,39] It involves acknowledging and addressing biases, attitudes, assumptions, stereotypes, prejudices, structures, and characteristics that may affect the quality of care provided to patients from diverse cultural backgrounds. Indigenous Peoples often face disproportionate obstacles in accessing health care services given historical trauma, ongoing systemic racism, and cultural differences. The interpretation of our results was strengthened by ongoing collaboration with Indigenous partners and patient representatives, ensuring that community perspectives and priorities informed both the analysis and the recommendations for future research and care delivery.[19,39]

Although telemedicine adoption was limited in our cohort, it is not viewed unfavourably by Indigenous communities but rather approached with caution owing to concerns about cultural safety, trust, privacy, and technological barriers.[41] Community engagement, codesign, and the provision of culturally safe telemedicine services are essential for broader acceptance. Importantly, telemedicine offers the potential to reduce the financial and environmental burden of medical displacement, which has been highlighted by community leaders as a key priority. Efforts to expand telemedicine must ensure that it is offered as an option — respecting patient choice — and that implementation addresses both technical and cultural barriers to maximize its benefits for cost, access, and planetary health.[34]

Limitations

We used hospital visits as a proxy for patients' length of stay in Montréal, which may lead to an underestimate of the total duration as flight coordination might not align perfectly with appointments. The 2-week threshold, based on local policy, may not capture all variations in patient circumstances. Although the threshold serves as a valuable benchmark, it does not account for patient preferences or extenuating circumstances that could affect travel decisions. The study's focus on encounters at the MCH excluded potential visits to outside facilities or local clinics, meaning we may have underestimated total health care interactions. Additionally, our study's retrospective nature and reliance on electronic medical records may have introduced inaccuracies or missing data, particularly regarding cultural and linguistic factors. Lastly, we did not directly assess patient and family experiences or satisfaction with care. Despite these limitations, the findings provide important insights into the current state of surgical care for pediatric patients from northern Quebec and offer a foundation for future improvements in care delivery and coordination.

Conclusion

This study represents a comprehensive population-level evaluation of the extent of medical displacement associated with tertiary pediatric surgical care for Indigenous communities in northern Quebec. Patients from these regions often spend considerable time away from home to receive necessary surgical care, primarily owing to vast distances and limited health care infrastructure. Despite the potential benefits, telemedicine has not been widely adopted during the perioperative period. However, policy initiatives aimed at expanding telehealth infrastructure present a promising opportunity to improve access to specialized care for remote communities. Enhancements in Internet connectivity and integration of telehealth services could reduce medical displacement for Indigenous patients by providing more accessible health care models tailored to their needs. With this information, patients, families, and clinicians, in conjunction with involved institutions, can establish a foundation for discussions on improving health care access and reducing the need for extensive travel.

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