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Review with Case Report

Paediatric Surgery: A True Blessing "Beyond Saving Lives, Building Futures"

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ABSTRACT

Background:

Paediatric surgery has transformed outcomes for children with congenital and acquired surgical conditions. What was once synonymous with early mortality or lifelong disability is now increasingly compatible with survival, normal growth, improved quality of life and dignity. This article defends the hypothesis that Paediatric surgery is a true blessing—for children, their families, and society at large— drawing on international evidence, World Health Organization (WHO) initiatives[1], and regional experience from Pacific Medical College and Hospital, Udaipur, Rajasthan.

Methods/Approach:

A narrative review of global paediatric surgical practice was conducted, with particular emphasis on data from the World Health Organization (WHO) [1] and the Lancet Commission on Global Surgery[2]. The review integrated published literature, international guidelines, and contextualised findings within the Indian healthcare landscape. Clinical illustrations were incorporated, together with a focused case study of the nine-year journey in establishing paediatric surgical services at Udaipur including 5 years of service at Pacific Medical College and Hospital, Udaipur, Rajasthan. Humanitarian, developmental, and technological perspectives were included to provide a comprehensive understanding of paediatric surgery as both a clinical discipline and a societal necessity.

Findings:

Paediatric surgery saves lives at the earliest stages of human development, facilitates normal physical and psychosocial growth, and restores essential function and quality of life. Beyond its direct clinical benefits, it alleviates the emotional and financial burden borne by families and strengthens long-term human capital by enabling children to become healthy, productive adults.

Global evidence demonstrates significant improvements in survival and outcomes for conditions once considered uniformly fatal, such as tracheoesophageal fistula, anorectal malformations, and congenital diaphragmatic hernia. Advances in neonatal anaesthesia, intensive care, and minimally invasive techniques have been pivotal to these gains.

Despite such progress, access remains profoundly unequal. WHO estimates suggest that between 1.7 and 1.75 billion children worldwide lack timely, affordable, and safe surgical care, with the greatest disparities affecting low- and

middle-income countries (LMICs)[1].

The Udaipur case study, centred on Pacific Medical College and Hospital, illustrates how vision, awareness-building, and collaborative practice can transform regional paediatric surgical care. Over nine years, the establishment of neonatal and paediatric intensive care units, combined with community outreach and multidisciplinary teamwork, has enabled thousands of successful interventions—demonstrating how even resource-constrained settings can achieve world-class outcomes through commitment and innovation.

Conclusion:

Paediatric surgery is not merely a clinical specialty; it is a social, developmental, and humanitarian imperative. By saving lives, preventing disability, and enabling children to achieve their full potential, it exemplifies the highest ideals of medicine. The Udaipur experience at Pacific Medical College and Hospital demonstrates how vision, dedication, and collaboration can transform regional healthcare delivery, even within resource-constrained settings.

To ensure that all children benefit from this blessing, there is an urgent need for sustained investment in surgical systems, workforce training, infrastructure, and equitable access to care. Global collaboration—anchored in the principles of the World Health Organization and the Lancet Commission on Global Surgery—will be essential in narrowing disparities and safeguarding the future health of children worldwide.

KEYWORDS: Paediatric surgery, Congenital anomalies, Neonatal surgery, Surgical access, Global child health, Disability-adjusted life years (DALYs)

INTRODUCTION

Children are not merely small adults; their physiology, disease spectrum, and surgical requirements are distinct and demand specialised expertise. Paediatric surgery has evolved as a discipline uniquely positioned to address congenital anomalies, traumatic injuries, and acquired conditions in early life. What was once associated with near-certain mortality or lifelong disability can now often be managed successfully, ensuring survival, growth, and meaningful participation in society.

This article argues that paediatric surgery is a true blessing—clinically, socially, and economically. It not only saves lives but also restores dignity, prevents long-term disability, and supports the broader goals of human development. Yet, access to paediatric surgical care remains profoundly unequal, particularly in low- and middle-income countries where the burden of untreated surgical disease is highest.

To illustrate this dual reality—its transformative potential and its systemic inequities—we combine international data, World Health Organization (WHO)[1] and Lancet Commission on Global Surgery perspectives[2], with a focused regional case study from Pacific Medical College and Hospital, Udaipur, Rajasthan, India. This integrated approach underscores both the promise of paediatric surgery and the urgent need to expand its reach.

Paediatric Surgery: A Global Blessing

Saves Lives Early

Paediatric surgery addresses life-threatening conditions at the very beginning of life. Congenital anomalies such as tracheoesophageal fistula, congenital diaphragmatic hernia, and intestinal atresia, once uniformly fatal, can now be corrected with high survival rates in centres with appropriate expertise. These interventions transform otherwise terminal diagnoses into opportunities for healthy survival.

Allows Normal Development

Timely surgical interventions prevent long-term morbidity and allow children to achieve developmental milestones. For example, early treatment of Hirschsprung's disease or neural tube defects prevents malnutrition, chronic constipation, urinary dysfunction, and lifelong disability. By restoring normal physiology, paediatric surgery enables children to grow, learn, and integrate fully into society.

Improves Quality of Life

Beyond survival, paediatric surgery focuses on restoring function and dignity. Corrective procedures for cleft lip and palate, hypospadias, or limb deformities enhance both functional and aesthetic outcomes, allowing children to participate confidently in school, play, and social life. Quality of life, not just longevity, is at the heart of the discipline.

Builds a Strong Future

Preventing lifelong disability preserves human capital. A child treated for congenital or acquired surgical disease has the chance to contribute productively to society, thus reinforcing the economic and developmental fabric of their community. Paediatric surgery is therefore an investment in the future, with dividends in health, education, and workforce participation.

Provides Relief to Families

The benefits of paediatric surgery extend to the household. By alleviating the stigma, distress, and financial burden of untreated conditions, it restores stability and hope to families. Parents are spared the anguish of preventable loss or disability, and siblings benefit from a less disrupted family life.

Challenges and Global Disparities

Workforce Shortages

The global distribution of paediatric surgeons is strikingly unequal. In Malawi, there are just 0.17 paediatric surgeons per million children, compared with more than 30 per million in many high-income countries such as the United Kingdom and United States[7,8].

India provides a unique perspective. With 472 million children under the age of 18 (nearly 39% of its total population, based on Census 2011), it bears one of the world's largest burdens of paediatric surgical need[9]. Yet the country has an estimated fewer than 2,500 practising paediatric surgeons to serve this enormous population[10]. This translates to barely 1–2 paediatric surgeons per million children, a figure that is considered grossly insufficient. Moreover, most specialists are concentrated in urban tertiary centres, leaving rural and tribal populations with little or no access to specialised care[11].

Table 1: Survival improvements in major congenital anomalies with paediatric surgery

Condition	Pre-surgical Era Survival (%)	Modern Surgical Era Survival (%)	Key Reference
Oesophageal Atresia with TEF	~0	85–90	Spitz, 2007[3]
Congenital Diaphragmatic Hernia	<10	70–80	Burgos, 2017[4]
Anorectal Malformations	<20	>90	Levitt & Peña, 2007[5]
Intestinal Atresia	<10	>90	Holcomb, 2014[6]

Table 2: Global paediatric surgical workforce distribution

Country/Region	Paediatric Surgeons per million Children	Source
Malawi	0.17	Grabski, 2020[7]
Pakistan	0.4	Grabski, 2020[7]
Sub-Saharan Africa (Average)	<1	Butler, 2017[11]
India	≈ 4.8–5.3 (assuming <2,500 paediatric surgeons; 472M children)	IAPS Diary[10], Census 2011[9]
High-income Countries (e.g., UK, USA)	30+	Wright, 2016[8]

Infrastructure Gaps

Access remains severely limited in low- and middle-income countries. It is estimated that up to 90% of children in sub-Saharan Africa lack timely surgical care, with similar disparities in South Asia[11].

Financial Barriers

Even where surgical expertise is available, out-of-pocket costs push many families into catastrophic health expenditure and poverty. For the most vulnerable households, surgery is not a realistic option without systemic reform and financial protection.

CASE STUDY

Nine-Year Journey of Paediatric Surgery in Udaipur

The development of paediatric surgery in Udaipur over the past nine years exemplifies the transformative potential of this specialty in a regional Indian context. Spearheaded by the paediatric surgical unit at Pacific Medical College and Hospital (PMCH), the journey illustrates how vision, awareness-building, and multidisciplinary collaboration can establish and expand a specialty where none previously existed.

From modest beginnings in a setting with limited infrastructure and low public awareness, paediatric surgical services in Udaipur have grown into a regional hub of excellence. This progress has been achieved through community outreach, the establishment of neonatal and paediatric intensive care facilities, and the cultivation of strong partnerships among paediatricians, anaesthetists, intensivists, and nursing teams.

Achievements (in Numbers)

- Over 3,800 successful paediatric surgical cases have been performed in Udaipur to date.
- At PMCH alone, more than 2,123 surgeries were completed, covering the full spectrum of paediatric surgical care, including:
    - Paediatric Urology: 486
    - Genital Reconstructive Surgeries: 39
    - Inguino-scrotal: 463
    - Abdominal Surgery: 242
    - Laparoscopic Surgery: 145
    - Neonatal Surgery 213
    - Thoracic Surgery: 32
    - Neurosurgery: 67
    - Tumour: 6
    - Other Procedures: 430

This record demonstrates both the breadth and depth of services now available locally, reducing the need for families to travel to distant centres for care.

The Udaipur experience offers an instructive example of how determination and innovation can overcome systemic barriers, creating sustainable paediatric surgical care that directly benefits children, families, and society.

Future Directions: Hope for Tomorrow

Technological Innovations

The future of paediatric surgery will be defined by rapid advances in technology. Minimally invasive and robotic-assisted surgery are already transforming outcomes by reducing pain, shortening hospital stays, and improving precision[12]. Emerging fields such as foetal surgery and regenerative medicine hold the promise of correcting anomalies even before birth or restoring tissue function once thought irreversibly lost. These innovations are steadily moving from experimental settings into mainstream clinical practice, bringing new hope to children and families worldwide.

Global Initiatives

The advancement of paediatric surgical care is also supported by powerful global movements. The World Health Organization's Global Initiative for Emergency and Essential Surgical Care (GIEESC)[13] and the Lancet Commission's *Global Surgery 2030* agenda[14] have placed surgical equity firmly on the international health agenda. Programmes such as KidsOR, which equips operating theatres across low- and middle-income countries, are directly expanding access to safe paediatric surgery[15]. Together, these initiatives highlight the recognition of surgery as an indispensable component of universal health coverage.

Local-Global Synergy

Regional examples, such as the nine-year journey of paediatric surgery at Pacific Medical College and Hospital in Udaipur, India, complement these global efforts. They demonstrate how international frameworks can be adapted to local realities, and how grassroots leadership can amplify the impact of global initiatives. By bridging local innovation with global strategy, paediatric surgery can move closer to the goal of equitable access for every child.

DISCUSSION

Paediatric surgery embodies the fusion of science and humanity. Globally, it saves lives, prevents disability, and restores dignity to children who might otherwise face premature death or life-long impairment. Locally, in Udaipur, the nine-year journey of developing paediatric surgery demonstrates how individual vision and institutional commitment can transform the healthcare landscape of an entire city. The establishment of neonatal and paediatric intensive care services, coupled with community outreach and awareness-building, illustrates the broader truth that systemic change often begins with the dedication of a few committed individuals.

At the heart of this discourse lies an ethical imperative: no child's chance of survival or quality of life should be determined by their birthplace. The stark inequities between high-income countries and low- and middle-income countries highlight the urgent need for coordinated investment in workforce training, infrastructure, and sustainable financing. Bridging these gaps is not only a medical necessity but also a moral duty—one that aligns with the principles of equity and justice that underpin global health.

CONCLUSION

Paediatric surgery is a true blessing—for children, their families, and society at large. By saving lives, preventing disability, restoring quality of life, and safeguarding human potential, it embodies the highest ideals of medicine.

The Udaipur case study demonstrates that even in resource-limited regions, vision, persistence, and teamwork can build sustainable paediatric surgical services that change outcomes for thousands of children. Such regional experiences, when aligned with global strategies, show that equity in paediatric surgical care is both achievable and urgent.

The global community now faces a collective responsibility: to ensure that this blessing is not confined to the privileged few, but recognised as the right of every child, everywhere.

CONFLICT OF INTEREST: None

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REFERENCES

1. World Health Organization. Congenital anomalies. WHO Fact Sheet. 2023.
2. The Lancet Commission on Global Surgery. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. Lancet. 2015; 386(9993):569–624.
3. Spitz L. Oesophageal atresia. Orphanet J Rare Dis. 2007; 2:24.
4. Burgos CM, Frenckner B. Congenital diaphragmatic hernia: a European study on survival and morbidity. J

Pediatr Surg. 2017; 52(1):34–39.

5. Levitt MA, Peña A. Outcomes from the correction of anorectal malformations. *Curr Opin Pediatr.* 2007; 19(3):334–338.
6. Holcomb GW, Murphy JP, Ostlie DJ. Ashcraft's Pediatric Surgery. 6th ed. Elsevier; 2014.
7. Grabski DF, Ameh EA, Ozgediz D, et al. Global paediatric surgery workforce deficits: data from 120 countries. Lancet Child Adolesc Health. 2020; 4(7): e20–27.
8. Wright NJ, Anderson JE, Ozgediz D. Global paediatric surgery: current status and future directions. J Pediatr Surg. 2019; 54(11):2234–2240.
9. Census of India. Provisional Population Totals, 2011. Registrar General of India; 2011.
10. Indian Association of Paediatric Surgeons (IAPS). Workforce data and recommendations. IAPS Annual Report 2022.
11. Butler EK, Tran TM, Fuller AT, et al. Paediatric surgery in sub-Saharan Africa: a descriptive analysis of surgical capacity and workforce. *World J Surg.* 2017; 41(6):1516–1523.
12. Ponsky TA, Krpata DM. Paediatric robotic surgery: lessons learned and early outcomes. *Semin Pediatr Surg.* 2013
13. World Health Organization. Global Initiative for Emergency and Essential Surgical Care (GIEESC). WHO; 2005.
14. Meara JG, Leather AJM, Hagander L, et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Lancet.* 2015; 386(9993):569–624.
15. KidsOR (Kids Operating Room). Annual Report 2022. Edinburgh: KidsOR; 2022.