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Original Research Article

Beyond perceptions: evaluating South Asian background and its association with obstetric outcomes

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ABSTRACT

Background: Perineal lacerations are common complications of vaginal delivery and can lead to pain, infection, incontinence, dyspareunia, and impaired pelvic floor function. These injuries occur more often after operative vaginal deliveries (OVDs). Clinicians at St. Joseph's Medical Center (SJMC) raised concerns that severe third- and fourth-degree lacerations may be higher than expected and disproportionately affect South Asian women, a population that may be at increased risk of obstetric anal sphincter injuries (OASIs) due to shorter perineal body length and unique pelvic anatomy.
Methods: A retrospective review of 937 randomly selected delivery records from 2018–2025 at SJMC in Stockton, California was conducted. Ethnicity was verified by chart review and patients were contacted when necessary, and data was stratified by ethnicity to evaluate associations with caesarean delivery, OVDs, and perineal lacerations.
Results: South Asian women accounted for nearly 40% of all caesarean deliveries, over 40% of OVDs and perineal tears. Notably, of the Asian population group, South Asians experienced 100% of the severe 4th degree perineal tears reported. And, from the entire eligible study population, South Asians contributed to nearly 17% of severe perineal tears.
Conclusions: Although provider bias persists in viewing South Asian women as higher risk, the data suggest SJMC obstetricians maintain low overall adverse outcomes while identifying a subgroup that may benefit from further study.

Keywords: Caesarean delivery, Obstetric anal sphincter injury, Operative vaginal delivery, Perineal lacerations, South Asian women

INTRODUCTION

Operative vaginal deliveries, also known as instrumental vaginal deliveries, are vaginal births assisted by vacuum or forceps to aid in the delivery of the neonate. These interventions are indicated in several maternal and fetal clinical scenarios, including maternal exhaustion, arrest of descent, prolonged second stage of labor, fetal malpositioning, or the need to expedite delivery for safety reasons.[1,2] The choice between forceps and vacuum largely depends on the clinical situation, physician experience, and provider comfort.[2] However, both methods carry maternal and fetal risks. Forceps deliveries are particularly associated with higher rates of third- and fourth-degree perineal lacerations, while both instruments are linked to fetal cephalohematomas, maternal urinary incontinence, and anal sphincter dysfunction at similar rates.[3,4] Additionally, OVDs are associated with increased risks of fetal intracranial hemorrhage, facial lacerations, facial palsy, maternal fecal incontinence, and combined

maternal-fetal incontinence compared to cesarean deliveries.[5,6]

Perineal lacerations are a major source of maternal morbidity in vaginal birth, occurring when the tissue between the vagina and anus is torn during delivery. These injuries range in severity from first-degree tears involving only the perineal skin to fourth-degree lacerations extending through the rectal mucosa.[7] Severe third- and fourth-degree lacerations are particularly concerning due to their association with obstetric anal sphincter injuries (OASIs) and long-term complications such as fecal incontinence, chronic pelvic pain, impaired wound healing, and reduced quality of life.[6] Risk factors for severe perineal lacerations include primigravidity, fetal macrosomia, cephalopelvic disproportion, shoulder dystocia, and a history of prior severe tears.[8] Operative vaginal deliveries (OVDs), while clinically indicated in cases of maternal exhaustion, prolonged second stage, or non-reassuring fetal status, further increase the likelihood of perineal trauma. Forceps-assisted births, in particular, are associated with higher rates of third- and fourth-degree lacerations compared to vacuum-assisted deliveries.

Despite national efforts to reduce operative vaginal deliveries, which currently account for 3.3% of all vaginal births according to the CDC, higher rates persist in certain regions, including Stockton, California which is one of the most ethnically diverse populations in the Central Valley.[2] In Stockton, obstetricians at St. Joseph's Medical Center (SJMC)- have expressed concern that both OVDs and perineal lacerations appear to occur at higher rates among their South Asian patients. Previous studies in Israel and Australia have identified South Asian women as a high-risk group for OASIs, possibly due to shorter perineal body length and unique pelvic anatomy.[10,11] Sociocultural and healthcare access factors, including language barriers and differing attitudes toward childbirth and pelvic floor therapy may further contribute to disparities in outcomes.

Importantly, the risk profile of South Asian women in the U.S. may differ from that of women in South Asia due to environmental, dietary, and lifestyle changes as highlighted in the "screen at 23" campaign for diabetes.[12] For instance, despite lower average BMI, Asians-including South Asians- are known to have higher visceral fat composition, which may influence pelvic floor integrity and delivery outcomes. Analogous research on cancer risk among Japanese immigrants to the US has shown how migration alters health profiles, suggesting that obstetric outcomes may be similarly influenced by environment and geography.[13]

This study aimed to quantify the prevalence of perineal lacerations, OVDs and caesarean sections among South Asian women delivering at SJMC. By identifying whether South Asian ethnicity is an independent risk factor for severe perineal trauma, OVDs or caesareans in this diverse US population, the study seeks to inform more accurate counselling, risk-aware informed consent, and individualized delivery planning or expelling the internal biases clinicians may have when treating a South Asian patient.

METHODS

This study employed a retrospective chart review at St. Joseph's Medical Center (SJMC) in Stockton, California, a teaching hospital serving a racially and ethnically diverse population. The study period encompassed all deliveries between January 2018 and January 2025. Inclusion criteria were all women with electronically documented delivery records at SJMC within the study timeframe. The SJMC Research Department generated a list of eligible medical record numbers (MRNs). Using a randomization tool, approximately 3000 MRNs were selected retroactively from January 2025 backward. Of the 3000 MRNs randomized, only 937 were used for chart review. Medical records were reviewed until at least 100 subjects were in each category. Delivery outcomes were categorized into three primary groups: 1) perineal lacerations (classified by degree of severity), 2) operative vaginal deliveries (vacuum or forceps-assisted), and 3) caesarean sections.

Race and ethnicity data were initially extracted from electronic health records. Because the EHR system does not distinguish between South Asian and other Asian categories, patients who self-identified as "Asian" were contacted by telephone to clarify their ethnic background. A standardized script was used, and verbal consent was obtained before collecting this additional demographic information.

Data collection occurred remotely over a 2-month period. Information was abstracted from delivery notes, including presence and degree of perineal laceration, mode of delivery, and self-identified ethnicity. MRNs that did not correspond to a patient with documented delivery information (i.e., no delivery note) were excluded. MRNs associated with vaginal deliveries that did not meet any of the predefined delivery outcome criteria were also excluded, accounting for the 371 participants removed from the final analysis. Data was entered into a HIPAA-compliant, access-restricted Excel spreadsheet stored on an institutional Google Drive. Identifiable data (e.g., MRNs, contact information) were retained only for participant contact and subsequently deleted after de-identification of the dataset.

Descriptive statistics was used to calculate prevalence rates across delivery categories and ethnic groups. Comparative analysis was used to assess whether South Asian ethnicity independently predicts severe perineal laceration risk, risk of OVD and risk of caesarean section.

RESULTS

937 charts were reviewed and, of those, only 562 met the inclusion criteria. Eleven of which declined to provide racial identity within their electronic medical records,

leaving 427 who self-identified as non-Asian and 124 self-identified as "Asian" (Figure 1). Of the 124 who self-identified as "Asian," 14 did not consent to participate in the study, 46 identified as South Asian, and 64 identified as non-South Asian.

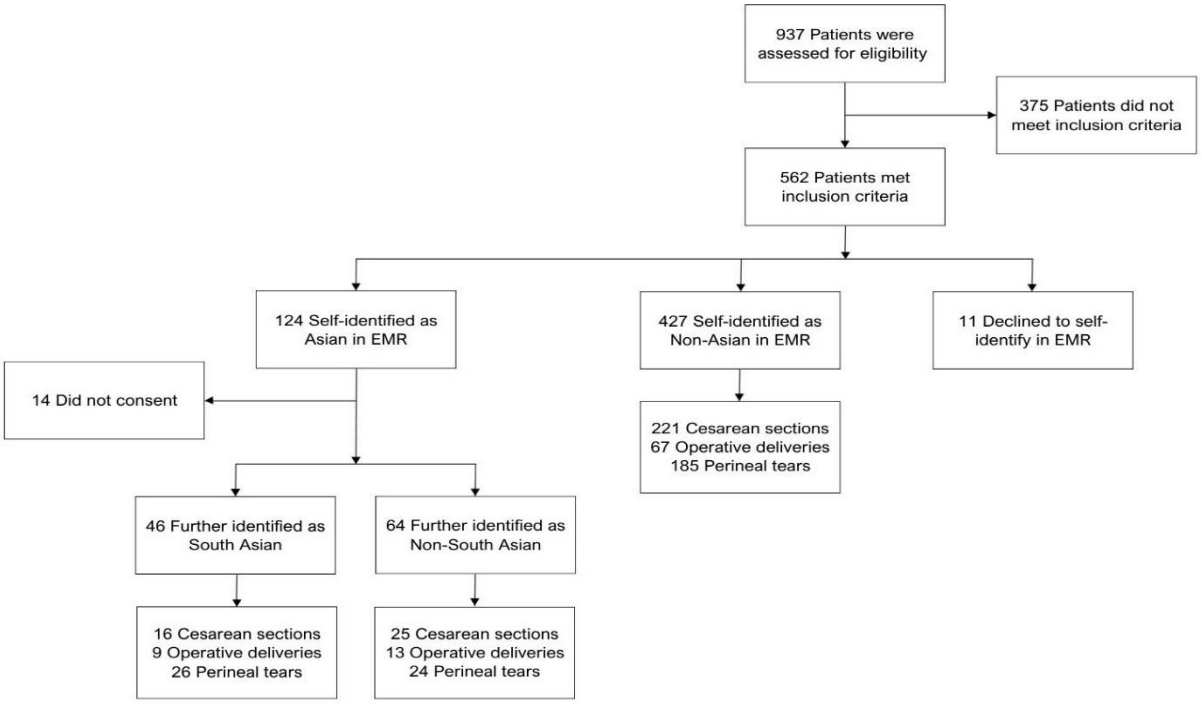

Figure 1: Demographics and outcomes.

Of the 937 EMR charts reviewed, 562 were eligible for further analysis. 11 declined to provide racial identity within the chart. 427 self-identified as Non-Asian (Black, White, Hispanic, etc.). 124 self-identified as Asian and were contacted via phone call for further ethnicity specification. Of the 124, 14 did not consent to participate, 46 identified as South Asian, and 64 identified as Non-South Asian.

Table 1: Comparison of delivery outcomes by Asian and South Asian ethnicity.

Delivery outcome	Percentage of eligible patients	
	Asian (%)	South Asian (%)
C-section	15.33	5.75
Operative delivery	24.72	10.11
Perineal tear	21.28	11.06

Percentage of Asian and South Asian patients with delivery outcomes of interest. Percentages represent the proportion of total eligible patients within each ethnic group with the specified delivery outcome.

Table 2: Distribution of perineal tear severity among South Asian patients.

Severity	Percentage
First degree	8.22
Second degree	12.33
Third degree	0.00
Fourth degree	16.67

Percentage of South Asian patients who experienced perineal lacerations, stratified by severity of tear (first to fourth degree). Percentages represent the proportion of all eligible patients who were South Asian and experienced the specified degree of perineal tear.

Table 3: Delivery outcomes of South Asians among Asian patients.

Delivery outcome	Percentage South Asian
C-section	37.50
Operative delivery	40.90
Perineal tear	52.00

Percentage of South Asian patients among all Asian patients with each delivery outcome of interest.

Table 4: Proportion of South Asian patients among Asian patients with perineal tears, by degree of tear.

Degree of tear	Percentage
First degree	58.33
Second degree	54.55
Third degree	0.00
Fourth degree	100.00

Percentage of Asian patients with perineal tears who were South Asian, categorized by tear severity (first through fourth degree).

All percentages were calculated within their respective delivery categories as shown in Table 1. Among all caesarean deliveries, 5.75% of patients were South Asian. Within operative vaginal deliveries, 10.11% were South Asian, and among patients with perineal lacerations, 11.06% were South Asian. When stratified by degree of

perineal laceration, 8.22% of first-degree tears, 12.3% of second-degree tears, 0.00% of third-degree tears, and 16.67% of fourth-degree tears occurred in South Asian patients (Table 2).

Most notably, when the data was examined within the subgroup of patients identifying as Asian, South Asians represented 37.50% of caesarean deliveries, 40.90% of operative vaginal deliveries, and a striking 52.00% of perineal lacerations (Table 3). Among the patients identifying as Asian who experienced any perineal tear during delivery, a large majority of them were South Asian as shown in Table 4. Of all Asian patients, South Asians accounted for 58.33% of first-degree and 54.55% of second-degree perineal tears. No third-degree tears occurred among South Asian patients, while 100% of fourth-degree tears in the sample were observed in South Asian participants.

DISCUSSION

This study aimed to assess whether South Asian background is an independent risk factor for adverse obstetric outcomes, including caesarean delivery, operative vaginal delivery, and perineal laceration at SJMC. The proportion of these outcomes occurring among South Asian patients within the Asian subgroup was striking: nearly 40% of caesarean deliveries, and over 40% of operative vaginal deliveries and perineal lacerations in patients identified as Asian occurred in South Asians. Notably, the rate of fourth-degree lacerations among South Asians was 16.67%, which was 100% of the 4th degree lacerations that occurred in our Asian population altogether, aligning with e.g., Baruch et al, Brown et al, suggesting an increased risk of obstetric anal sphincter injury in this population.[10,11]

Despite these findings, our results also indicate that obstetricians at St. Joseph's Medical Center (SJMC) are maintaining relatively low overall rates of adverse outcomes with South Asians contributing only 5.75%, 10.11% and 11.06% of the total number of C-sections, operative vaginal deliveries and perineal tears, respectively. These findings may reflect physician skill, technique tailored to the patient population, or unique demographic features of the community. Patient-reported outcomes further support this, as many women expressed satisfaction with their care and often did not recall perineal injuries that required suturing. Additionally, national maternity health initiatives to reduce caesarean rates may also be contributing to this decline, with SJMC demonstrating alignment with these efforts.

Our data demonstrate reassuringly low rates of operative vaginal deliveries, a finding that carries important implications for neonatal outcomes as well. Operative vaginal deliveries, while sometimes clinically indicated, are associated with increased neonatal risks such as intracranial hemorrhage, facial nerve injury, and brachial plexus injury.[1,2] Current guidelines emphasize that these procedures should be performed only when clearly indicated and by skilled providers to mitigate risks.[4] The consistently low frequency of these interventions in our cohort suggests that providers are effectively balancing the need for timely delivery with strategies that minimize avoidable complications, ultimately supporting improved outcomes for both mothers and infants

It is critical to further contextualize why South Asian patients may experience higher rates of caesarean sections, operative deliveries, and perineal lacerations compared to other Asian counterparts. Previous research has proposed several non-mutually exclusive explanations; however, a large majority of this research has been conducted amongst global populations outside of an American context. Maternal anthropometry, including shorter stature and smaller pelvic dimensions, has been linked to increased rates of cephalopelvic disproportion and operative delivery in South Asian women.[14,15] In addition, population-based studies suggest that shorter perineal body length may predispose to higher rates of obstetric anal sphincter injury and severe perineal trauma.[10,11] Metabolic factors may also play a role: despite lower BMI, South Asian women have higher rates of gestational diabetes and insulin resistance, which are associated with increased intrapartum monitoring, induction, and intervention.[15] Finally, epidemiologic studies indicate that South Asian women face an earlier rise in stillbirth risk, often prompting earlier induction or lower thresholds for intervention.[14]

Beyond biological explanations, qualitative studies highlight the influence of cultural norms, including the role of extended family members in delivery decision-making, fear of labor pain, limited health literacy, and migration-related changes in postpartum practices and support systems.[16] These dynamics may shape both maternal preferences and provider decision-making, potentially compounding risk. Taken together, these biological and sociocultural factors may contribute to the higher proportions we observed, but they were not directly examined in our analysis. Our descriptive findings therefore add to a growing body of literature calling for research that disentangles ethnicity-specific risk factors within the broad "Asian" category, through an approach that includes patient perspectives.

This warrants the need for robust ethnic background data collection within hospital systems. More detailed identifiers would allow for improved risk stratification, ultimately guiding more equitable and personalized obstetric care along with improving demographic research within the field. Future studies may also comment on other risk factors as well as additional demographic features.

This analysis would be further strengthened by an increase in sample size. Importantly, lack of specific ethnic background data served as a limitation in this study, prompting the need for further ethnicity data collection strategies including contacting patients directly. At SJMC, patients were limited to selecting from only five broad

categories (White, Asian, Black/African American, Hispanic, or other), which are insufficient to capture relevant cultural or ethnic distinctions. This study was designed to evaluate whether South Asian background is an independent risk factor for patients and therefore other risk factors such as gravidity or age were not taken into account. Additionally, data collection was also highly dependent on the quality and completeness of delivery documentation, which is provider specific. In particular, the degree of perineal laceration was recorded based on subjective provider assessment of the delivery and injury, which may vary between clinicians.

CONCLUSION

This study highlights that South Asian women face a disproportionately high risk of adverse obstetric outcomes. Within the Asian subgroup, they accounted for nearly 40% of caesarean deliveries, over 40% of operative vaginal deliveries, and perineal lacerations, demonstrating that South Asians contribute substantially to the burden of these outcomes among Asian patients. When considering the entire sample of 937 deliveries across all ethnic backgrounds, 16.67% of fourth-degree perineal lacerations occurred in South Asian women, underscoring their elevated risk for severe perineal trauma. These findings indicate that South Asian ethnicity may be an important risk factor for operative delivery- including both caesarean and operative vaginal deliveries- and severe perineal injury. By disaggregating Asian women into subgroups, this study advances understanding of obstetric risk in the United States, revealing disparities that are obscured when Asian patients are analyzed as a single group. Recognizing this heightened risk can inform clinical vigilance, patient counselling, and targeted preventive strategies, while highlighting the need for more detailed ethnicity data and further research into the biological and sociocultural factors contributing to these outcomes.

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