

# Short-term Outcomes of Lateral Pancreaticojejunostomy in Patients with Chronic Pancreatitis: A Case Series from a Tertiary Care Center

Yogesh B. Langade, Prabhat Nichkaode, Varun T. Pudota

Department of General Surgery, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India

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ABSTRACT

**Background:** Chronic pancreatitis (CP) is a debilitating condition characterized by irreversible pancreatic damage, leading to pain & significant morbidity. **Methods:** This case series analyzes the short-term outcomes of 20 patients having CP with intractable pain & ductal dilatation who underwent lateral pancreaticojejunostomy (LPJ) at a tertiary care center from January 2022 to May 2025. The cohort predominantly consists of young males, with idiopathic and alcohol-related etiologies being the most common. Preoperative evaluations included clinical assessments and imaging studies to determine the presence of ductal dilation and other complications. **Results:** Surgical intervention involved LPJ, which provided substantial postoperative pain relief, with 90% of patients reporting complete resolution of symptoms. Nutritional recovery was also notable, with 90% of patients experiencing significant weight gain within the first few months post-surgery. The overall complication rate was low, with no major adverse events or mortality. **Conclusion:** This study underscores the efficacy and safety of LPJ as a viable surgical option for managing chronic pancreatitis, particularly in patients with dilated main pancreatic ducts. The findings contribute valuable insights into the management of CP in diverse populations and highlight the need for further long-term studies to assess the durability of these outcomes.

**KEYWORDS:** Chronic pancreatitis, lateral pancreaticojejunostomy, main pancreatic duct, quality of life, weight gain

## INTRODUCTION

Chronic pancreatitis (CP) is a progressive inflammatory disorder of the pancreas characterized by irreversible fibrosis, ductal abnormalities, and eventual loss of exocrine and endocrine function. Patients commonly present with recurrent upper abdominal pain, malnutrition, steatorrhea, and diabetes, which significantly impair quality of life.<sup>[1,2]</sup>

The TIGAR-O classification outlines six causes of chronic pancreatitis: Toxic-Metabolic, Idiopathic, Genetic, Autoimmune, Recurrent acute pancreatitis, and Obstructive. Globally, alcohol is the most frequently implicated cause of CP, accounting for a substantial proportion of cases in Western populations. However, in South-East Asia, including India, a significant subset of patients presents with tropical or idiopathic forms of pancreatitis, often linked to genetic predisposition and

dietary factors.<sup>[3,4]</sup> Recent studies suggest that alcohol may account for only one-third to half of CP cases, highlighting the diverse etiological spectrum.<sup>[4,5]</sup>


CP typically affects middle-aged adults (40–62 years) with a male predominance (55–85%). In contrast, Indian patients often present at a younger age, likely due to early-onset genetic and environmental influences.<sup>[5,6]</sup> Regardless of etiology, most patients exhibit pancreatic ductal calcifications, and chronic abdominal pain remains the most frequent symptom, reported in 60–90% of cases.<sup>[6,7]</sup>

**Address for correspondence:** Dr. Prabhat Nichkaode, Department of General Surgery, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Sant Tukaram Nagar, Pimpri, Pune - 411 018, Maharashtra, India.  
E-mail: rajanichkaode@gmail.com

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Pain in CP is multifactorial, resulting from obstruction of the main pancreatic duct (MPD) by calculi, increased ductal pressure, pseudocysts, or neural involvement. Medical and endoscopic interventions may provide limited relief when ductal obstruction persists.<sup>[8,9]</sup> In such cases, surgical decompression is often required. Lateral pancreaticojejunostomy (LPJ) is a well-established drainage procedure, indicated in patients with a dilated MPD, and has been shown to provide effective pain relief and improve nutritional status.<sup>[2,10]</sup>

Despite the recognized role of LPJ, data on its outcomes in Indian patients, particularly those with complex or atypical presentations, remain limited. This case series analyzes the short-term outcomes of 20 patients with CP who underwent LPJ at a tertiary care center, focusing on postoperative pain relief, nutritional recovery, and complications. By presenting these real-world experiences, we aim to provide insight into the effectiveness and safety of LPJ in a diverse patient population.

## MATERIALS AND METHODS

This prospective case series includes 20 consecutive patients with CP or its variants without head mass who underwent LPJ, with or without additional procedures, at a tertiary care center between January 2022 and May 2025. All patients who underwent LPJ during this period were included.

Patients presenting with acute or chronic pancreatitis were evaluated. A detailed clinical history, laboratory investigations (serum amylase, lipase, liver function tests), and imaging studies (contrast-enhanced CT abdomen/pelvis or MRCP) were reviewed. Data collection includes—demographics, etiology, duration of illness, comorbidities, imaging findings—main pancreatic duct [MPD] diameter, ductal calculi, pseudocysts, and pain assessment using the Visual Analog Scale (VAS).

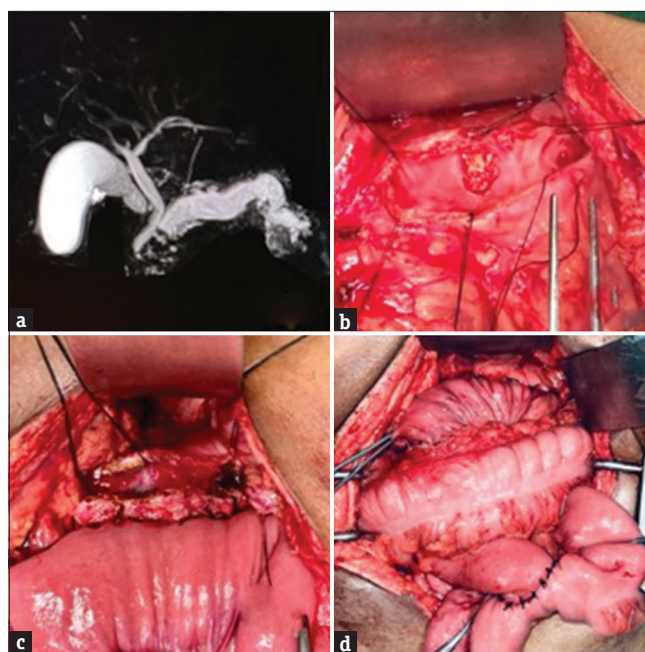
1. Indications for LPJ were: multiple prior hospitalizations due to Intractable pain non amenable to optimum medical management, failure of medical management, evidence of exocrine or endocrine dysfunction (pain, malabsorption, weight loss, or diabetes mellitus), dependency on Narcotics like analgesics due to long term use, MPD diameter  $\geq 7$  mm, and absence of a pancreatic head mass or malignancy on imaging. A gastroenterology opinion was obtained in patients who required prior endoscopic treatment.

All patients were optimized preoperatively according to institutional protocols, which includes nasogastric tube insertion and bowel preparation one day prior to surgery, broad-spectrum IV antibiotic as prophylaxis at induction

and up to 5-7 days in the post-operative period, and epidural catheter placement for postoperative pain control. Written informed consent was obtained from all patients for use of anonymized data.

LPJ was performed under general anesthesia via a midline laparotomy, which was preferred over bucket handle incision. The pancreas was assessed intraoperatively for head mass or suspicion of malignancy. The MPD was identified (using needle aspiration or intraoperative ultrasonography in difficult cases when duct identification was not possible by needle aspiration or palpation technique), opened longitudinally, explored from head to tail, and cleared of calculi. A 40–50 cm Roux-en-Y jejunal limb was anastomosed to the MPD using a two-layer, side-to-side anastomosis with running 2-0 PDS sutures for inner layer and 2-0 silk interrupted sutures for outer layer and jejunojunctionostomy was performed 40–50 cm distally to restore bowel continuity.<sup>[2]</sup> Drains were placed adjacent to the anastomosis, and drain fluid amylase levels were measured on postoperative day 3 to assess for leaks. The average operating time was 4.5 hours with minimal blood loss. Pancreatic biopsy was obtained for diagnosis [Figure 1].

Postoperatively, patients were managed with intravenous fluids, parenteral nutrition, broad-spectrum antibiotics, and analgesics, and were closely monitored for complications. Oral feeding, drain removal, and suture removal were performed based on individual recovery.



**Figure 1:** Showing imaging and operative steps of LPJ Image (a) shows MRCP picture of dilated MPD Image (b) shows stone in MPD Image (c) shows outer layer with 2-0 silk of the two layer anastomosis Image (d) shows completed Roux-en- y anastomosis of LPJ

At discharge, patients were prescribed analgesics as required and pancreatic enzyme replacement therapy for a longer period, generally required lifelong. Follow-up visits were scheduled every three weeks for the first three months, every three months for one year, and as clinically indicated thereafter. Postoperative outcomes assessed include—pain relief, weight gain, improvement in appetite, complications, return to normal activity, and overall improvement in quality-of-life.

## CASE SERIES

### Patient cohort

A total of 20 patients were included in the study. Their individual clinical details, management strategies, and outcomes are summarized in Figures 2-4. Among these, most cases followed the expected clinical course; however, three patients demonstrated unusual disease progression or postoperative complications and are described in detail below.

### Overall outcomes-following observations were made in our series - Figures 2-4

A total of 20 patients with CP underwent LPJ during the study period. The cohort consisted predominantly of males (16 patients, 80%), with only 4 females (20%). The mean age at presentation was 32.6 years (range 15–53 years), with most patients falling in the 31–50 year age group (55%), followed by the 15–30 year age group (40%). Only one patient (5%) was older than 50 years.

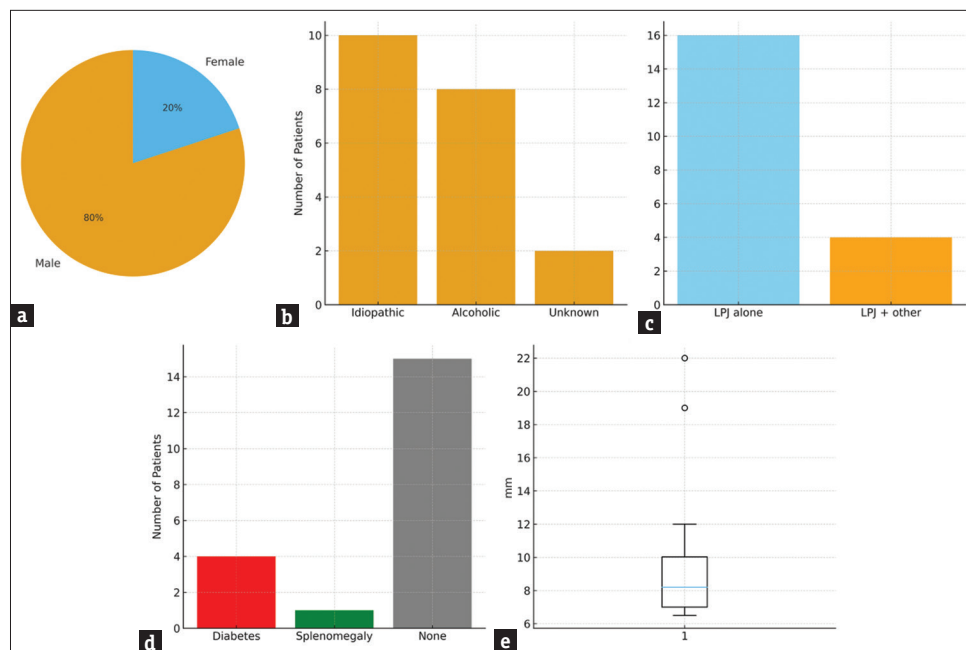
The majority of patients (85%) had a relatively short duration of illness of less than two years, whereas only one patient had symptoms persisting for more than five years. Major symptoms at presentation were abdominal pain ( $n = 20$ ) and weight loss ( $n = 18$ ) followed by dyspeptic symptoms ( $n = 8$ ) and steatorrhea ( $n = 4$ ). All 20 patients had a history of previous admissions related to CP amongst which 2 patients had undergone prior endoscopic procedures.

With respect to etiology, idiopathic chronic pancreatitis was the most frequent subtype, seen in half of the patients ( $n = 10$ , 50%). Alcohol-related chronic pancreatitis accounted for 40% of cases ( $n = 8$ ), while two patients (10%) had an unknown etiology. Diabetes mellitus was present in four patients (20%) at baseline, and one additional patient developed new-onset diabetes following surgery.

Surgical procedures performed included LPJ alone in 16 patients (80%), while 4 patients (20%) required additional interventions such as cholecystectomy, splenectomy, or choledochoduodenostomy and of the total patients, 3 patients required duct localization by intraoperative ultrasound. Out of 16 patients, 2 patients had undergone prior endoscopic management in the form of pancreatic duct stenting or cystogastrostomy before definitive surgery. The mean operative time was  $4.5 \pm 0.5$  hours.

### Postoperative outcomes

The follow-up period ranged from 3 months to 3.5 years. Postoperative follow-up revealed encouraging

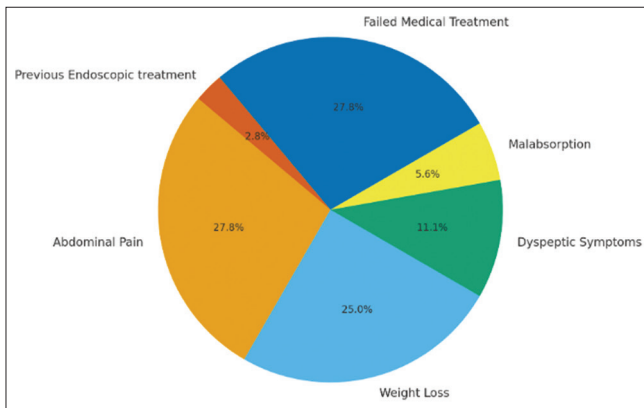


**Figure 2:** Baseline characteristics and operative details of 20 patients with chronic pancreatitis undergoing lateral pancreaticojejunostomy (LPJ). (a) Gender distribution, (b) Etiology of chronic pancreatitis, (c) Types of surgical procedures performed, (d) Associated comorbidities, and (e) Main pancreatic duct (MPD) diameter (boxplot)

outcomes. Pain relief was the most significant finding, with 18 patients (90%) reporting complete resolution of symptoms, while the remaining two experienced partial response and required mild oral analgesics. Nutritional recovery was notable, as 18 patients (90%) demonstrated weight gain of more than 2 kg within the first three to six months after surgery, along with improved appetite and dietary tolerance. The remaining 2 patients (10%) did not show significant weight gain—one due to postoperative diabetes and the other despite being otherwise healthy, suggesting variability in individual nutritional response.

The overall complication rate was low. Two patients (10%) experienced postoperative complications: one developed new-onset diabetes mellitus and another had a superficial surgical site infection, both of which were managed conservatively. Importantly, there were no major postoperative complications, no readmissions, and no mortality in this series. The mean duration of postoperative hospital stay was  $7.2 \pm 2.1$  days, ranging from 5 to 12 days.

However, a few cases exhibited unusual clinical features or required additional surgical interventions:



**Figure 3:** Distribution of symptoms among patients

#### Case 4: Chronic pancreatitis with prior endoscopic stenting

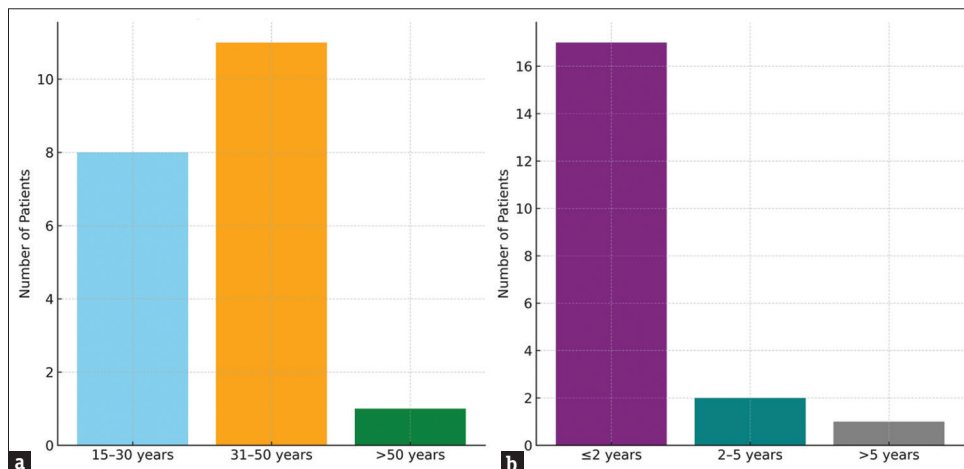
A 15-year-old male presented with a 5-year history of recurrent upper abdominal pain and progressive weight loss. The etiology of his chronic pancreatitis was unknown. Imaging revealed a mildly dilated main pancreatic duct (6.5 mm) with multiple intraductal calculi. Initially, he underwent endoscopic pancreatic duct stenting to relieve ductal obstruction. Despite temporary symptomatic improvement, persistent pain and ductal calculi necessitated definitive surgical management. The patient subsequently underwent LPJ. Postoperatively, he experienced complete relief from abdominal pain and gradual weight gain, demonstrating the efficacy of combined endoscopic and surgical management.

#### Case 7: Chronic calcific pancreatitis with portal hypertension and splenic artery aneurysm

A 35-year-old male with a 24-month history of abdominal pain and weight loss, with a history of chronic alcohol consumption, presented with features suggestive of chronic calcific pancreatitis (CCP). Imaging demonstrated dilated MPD (8 mm), multiple pancreatic ductal calculi, and a large pseudocyst, along with portal hypertension and splenomegaly. A splenic artery aneurysm (SAA) was also detected, which is a rare association in CCP. The patient underwent LPJ with splenectomy and SAA coiling, with the assistance of intraoperative ultrasonography (IOU) for MPD localization. Postoperatively, the patient had an uneventful recovery with no recurrence of abdominal pain, normalization of appetite, and weight gain on follow-up.

#### Case 3 and 15: Interstitial/chronic pancreatitis with chronic calculous cholecystitis

Two patients with chronic pancreatitis and coexisting chronic calculous cholecystitis underwent LPJ with cholecystectomy. The first was a 40-year-old female with



**Figure 4:** Baseline demographics of patients undergoing lateral pancreaticojejunostomy (LPJ). (a) Age group distribution. (b) Duration of illness before surgery

idiopathic chronic pancreatitis and a 12-month history of recurrent upper abdominal pain; imaging showed a dilated MPD (11 mm), multiple intraductal calculi, and a pseudocyst in the pancreatic head. The second was a 50-year-old male with alcoholic interstitial pancreatitis and a 3-month history of episodic epigastric pain; imaging revealed a dilated MPD (7 mm) with ductal calculi and a pseudocyst in the pancreatic tail. Despite differences in age, gender, duration, etiology, type of pancreatitis, MPD size, and pseudocyst location, both patients had complete postoperative pain relief, resumed normal diet, and demonstrated improved nutritional status.

#### **Case 18: Chronic calcific pancreatitis with giant duct dilatation and pseudocyst**

A 34-year-old male with a history of alcohol use presented with an 8-month history of abdominal pain and progressive weight loss. Radiological evaluation revealed giant MPD dilatation (22 mm), multiple ductal calculi, and a large pseudocyst. The patient underwent a two-stage management strategy: endoscopic cystogastrostomy for pseudocyst drainage followed by LPJ. This case highlights the utility of a combined endoscopic and surgical approach in the management of advanced CCP with giant duct dilatation. Postoperatively, the patient remained asymptomatic, with improved appetite and gradual weight gain.

#### **Case 19: Chronic calcific pancreatitis with chronic calculous cholecystitis and choledocholithiasis in a young patient**

A 17-year-old male presented with 6 months of recurrent abdominal pain, malnutrition, and weight loss. Imaging revealed CCP with dilated MPD (10 mm), pancreatic ductal calculi, coexistent CCC, and choledocholithiasis. This constellation of findings is uncommon, particularly in such a young patient. The patient underwent LPJ with cholecystectomy and choledochoduodenostomy. The postoperative course was uneventful, with resolution of symptoms and significant improvement in nutritional status on follow-up. This case emphasizes the importance of recognizing multi-organ involvement in pancreatitis at an early age.

## **DISCUSSION**

Chronic pancreatitis (CP) is a progressive condition involving permanent pancreatic damage, commonly linked to environmental factors in genetically or anatomically predisposed individuals. Alcohol and smoking are major risks, though the disease can occur without them.<sup>[11]</sup> Surgical management is indicated when medical therapy and endoscopic interventions fail to provide adequate relief. LPJ, also referred to as the Modified Puestow or

Partington–Rochelle procedure, is the preferred drainage surgery for patients with a dilated and obstructed pancreatic duct without an associated inflammatory mass.<sup>[2]</sup>

In our case series of 20 patients undergoing LPJ, we observed substantial pain relief and improvement in quality of life, consistent with previously published reports. Multiple studies have documented that LPJ provides long-term pain relief in 70–90% of patients, with sustained benefits extending beyond a decade in many cohorts.<sup>[2,12,13]</sup> Our findings are in agreement with these outcomes, with the majority of our patients achieving significant symptomatic improvement in the early postoperative period. Furthermore, our postoperative complication rates were minimal, underscoring the safety of the procedure when performed in appropriately selected patients.<sup>[14]</sup>

An important observation from our series was the rarity and diversity of intraoperative findings. While most patients presented with classic features of CP and a dilated duct, a subset demonstrated unusual intra-abdominal adhesions, distorted anatomy, and associated pseudocysts. These rare scenarios underscore the need for meticulous surgical planning and intraoperative adaptability. Similar atypical presentations have been sparsely reported in the literature, but our series contributes additional evidence of the heterogeneity in CP presentation. By documenting such variations, we emphasize that LPJ remains feasible even in complex anatomical situations, though with higher technical demands.

Decision of selecting proper surgical procedure depends on the morphology of the gland, especially the size of the main pancreatic duct (MPD); presence of inflammatory head mass; associated complications such as biliary obstruction, duodenal stenosis and pseudocysts.<sup>[15]</sup> In patients with a dilated duct and without a dominant head mass, LPJ is associated with less operative morbidity and shorter recovery times.<sup>[10]</sup> Comparative studies have suggested that while Frey's procedure may offer better long-term control of head-dominant disease, LPJ continues to provide excellent outcomes in ductal-dilation–dominant CP,<sup>[15,16]</sup> as seen in the majority of our cohort.

Obstruction of the main pancreatic duct by stones can be managed with surgical intervention, endoscopic techniques, or extracorporeal shock wave lithotripsy (ESWL). Endoscopic removal is less invasive than surgery but is most effective when the stone burden is limited and confined to the main duct.<sup>[17]</sup> However, long-term data suggest that endoscopic therapy is inferior to surgical drainage in terms of durability of pain relief and prevention of disease progression. The ESCAPE trial and

other randomized studies have reinforced surgery as the preferred treatment modality in selected patients.<sup>[18,19]</sup> In the long term, patients with advanced chronic pancreatitis who underwent primary surgical treatment for pancreatic duct obstruction experienced greater pain relief and required fewer interventions compared to those managed endoscopically. Notably, nearly half of the patients initially treated with endoscopy eventually required surgery.<sup>[19]</sup> While patients might require repeated endotherapy, surgery remains a single stage option which also preserves pancreatic function. Our findings lend further support to the superiority of surgical drainage, especially LPJ, in patients with large-duct disease.

One of the limitations of our series is the relatively short follow-up period (3 months to 3.5 years), which precludes firm conclusions regarding long-term outcomes. Additionally, the sample size is modest, though it is one of the larger single-center reports from our region. Despite these limitations, the uniformity of surgical technique, detailed documentation of rare cases, and the consistent improvement in patient outcomes strengthen the relevance of our findings.

Overall, our study reinforces that LPJ is a safe and effective procedure for the management of chronic pancreatitis with ductal dilation. It provides durable pain relief, improves nutritional status, and reduces hospitalizations. The inclusion of rare intraoperative findings in our series highlights the breadth of anatomical variations encountered in real-world practice and provides valuable insights for surgical teams managing similar cases.

## CONCLUSION

Lateral pancreaticojejunostomy (LPJ) remains a safe and effective surgical option for patients with chronic pancreatitis unresponsive to medical or endoscopic therapy. It provides significant and lasting pain relief, improves quality of life, and carries low postoperative morbidity. When necessary, LPJ can be safely combined with other procedures, aided by intraoperative ultrasonography for precise duct localization. Long-term follow-up and further studies are essential to assess sustained outcomes and address current limitations.

## Data availability statement

The depersonalised data supporting this study are available on request from the corresponding author (Dr Prabhat B Nichkaode), subject to approval of the institutional ethics committee, Dr D Y Patil Medical College, Hospital and Research Center, Pimpri, Pune, who had released the data specifically for the use in this study.

## Ethics approval

Ethics committee approval was taken at Dr. D Y PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTRE, PIMPRI, PUNE-018.

Approval Number: Ref. No.:I.E.S.C./W/65/2025.

## Author contributions

"All authors meet authorship criteria, have read and approved the final manuscript."

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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