Integrated Traditional Chinese and Western Medicine Nursing Care for Post-ERCP Acute Pancreatitis in a Child with Pancreatic Divisum: A Case Report

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Date: 2025-05-04T22:11:40+00:00

Abstract

This case report summarizes the nursing experience of treating a pediatric patient with pancreatic divisum (PD) who developed acute pancreatitis following ERCP surgery using a triple-technique approach combining self-prepared Qingyi acupoint paste application, traditional Chinese medicine cataplasm, and acupoint needle embedding therapy. Guided by the principles of TCM syndrome differentiation nursing care and meridian theory, this method effectively integrated Qingyi paste and mirabilite for abdominal application, complemented by acupoint needle embedding to achieve the therapeutic effects of soothing the liver, strengthening the spleen, unblocking the bowels, and clearing heat. Through an integrated Chinese-Western treatment model employing the external treatment of internal disease approach, this intervention accelerated symptom improvement in acute pancreatitis, shortened the disease course, and offers valuable clinical reference.

Full Text

Nursing Care of a Child with Acute Pancreatitis after ERCP for Pancreatic Divisum Treated by Integrated Traditional Chinese and Western Medicine

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Abstract

This case report summarizes the nursing experience of a child with pancreatic divisum (PD) who developed acute pancreatitis after endoscopic retrograde cholangiopancreatography (ERCP), treated with a three-in-one technique consisting of self-made Qingyi Plaster acupoint application, traditional Chinese medicine (TCM) external application, and acupoint embedding therapy. Guided by TCM syndrome differentiation and meridian theory, Qingyi Plaster combined with herbs such as mirabilite were applied to the abdominal area, supplemented by acupoint embedding to achieve the therapeutic effects of soothing the liver, strengthening the spleen, and purging the bowels to clear heat. This integrated TCM-Western medicine treatment model, employing external treatment for internal disease, accelerated symptom improvement in acute pancreatitis and shortened the disease course, providing a valuable reference for clinical practice.

Keywords: pancreatic divisum; ERCP; acute pancreatitis; Qingyi Plaster; traditional Chinese medicine application; acupoint embedding needle therapy

Pancreatic divisum (PD) is the most common congenital developmental anomaly of the pancreatic duct, resulting from abnormal fusion of the ventral and dorsal pancreatic ducts during embryonic development. This condition forces pancreatic juice from the dorsal pancreas (body, tail, and part of the head) to drain solely through the minor papilla. The incidence ranges from 5% to 12% in the general population, while among pediatric patients with pancreatitis, the prevalence can reach up to 25%. Currently, ERCP is considered the "gold standard" for diagnosing PD and represents the optimal approach for both diagnosis and treatment in children. Recently, our department admitted a 9-year-old, 4-month-old child with pancreatic divisum who developed post-ERCP pancreatitis. Through nursing interventions using self-made Qingyi Plaster acupoint application, mirabilite and other TCM external applications, and acupoint embedding therapy, the patient achieved excellent postoperative recovery with a shortened treatment course. We report our nursing experience below.

1.1 General Information

The patient was a 9-year-old, 4-month-old male who experienced recurrent upper abdominal pain and discomfort for nearly five years. Multiple visits to local hospitals resulted in a diagnosis of "gastritis," but treatment with anti-inflammatory and gastric-protective medications proved ineffective. On August 9, 2024, he experienced another episode. Local MRCP imaging suggested complex pancreaticobiliary maljunction with mild pancreatic thickening and signal changes. He was admitted to our department on three occasions (August 19, 2024; September 25, 2024; and December 18, 2024) and diagnosed with pancreatic divisum, undergoing multiple ERCP procedures. On January 25, 2025, the child developed upper abdominal pain without apparent cause, worsening

after meals, without nausea, vomiting, or jaundice. Laboratory reports from the local hospital showed: serum amylase 303 U/L, urinary amylase 1150 U/L. Hepatobiliary and splenic ultrasound revealed pancreatic enlargement, enhanced echogenicity, and pancreatic duct dilation. After treatment with omeprazole and somatostatin, abdominal pain decreased. For further diagnosis and treatment, he was admitted to our department on February 25, 2025, with a provisional diagnosis of "pancreatic divisum." Admission symptoms included upper abdominal distension and pain, no fever, no nausea or vomiting, no jaundice, normal appetite and sleep, and regular bowel movements. He denied any history of food or drug allergies.

1.2 Physical Examination

Vital signs: Temperature 36.5°C, pulse 72 beats/min, respiratory rate 15 breaths/min, blood pressure 122/78 mmHg. **Western medical examination:** Inspection revealed a flat, soft abdomen without visible gastrointestinal patterns or peristaltic waves. Palpation showed slight tenderness in the mid-upper abdomen without rebound tenderness, Murphy's sign negative. Percussion revealed no costovertebral angle tenderness. Auscultation showed bowel sounds not hyperactive, 2-3 times per minute. **TCM four examinations:** Observation showed normal spirit, ruddy complexion, moderate build, and posture in flexed knee lateral position. Olfactory examination revealed normal odor. Inquiry revealed upper abdominal distension and pain, normal appetite and sleep, and regular bowel movements. Pulse examination showed a small wiry pulse. Tongue appearance: pale red body with white greasy coating.

1.3 Diagnosis

Auxiliary examinations: Ultrasound showed pancreatic duct dilation. Gallbladder MRCP revealed narrowing of the pancreatic neck duct with dilation of the body and tail ducts. Laboratory reports indicated elevated serum amylase at 275 U/L. **TCM diagnosis:** Hypochondriac pain, classified as liver depression and spleen deficiency pattern. **Western medical diagnosis:** Pancreatic divisum.

1.4 Treatment Intervention

After admission, the patient received oral compound *Lactobacillus acidophilus* tablets to regulate intestinal flora, intravenous esomeprazole for acid suppression and gastric protection, intravenous tropisetron for antiemetic purposes, intravenous multivitamins for nutritional support, and intravenous somatostatin to inhibit pancreatic enzyme secretion. Simultaneously, Qingyi Plaster was applied to acupoints including Zhongwan (CV12), Shenque (CV8), Tianshu (ST25), Qihai (CV6), and Guanyuan (CV4) to purge heat from the bowels and regulate qi to relieve pain. Bilateral Zusanli (ST36) acupoint embedding was performed to strengthen the spleen and resolve dampness.

On the third day of admission, ERCP cholangiography and treatment were completed with nasobiliary drainage catheter placement. Post-ERCP pancreatitis developed (serum amylase rose to 446 U/L at 3 hours post-procedure), with the child experiencing mid-upper abdominal distension, pain, nausea, and vomiting. The patient was kept NPO (nothing by mouth) with 24-hour urine output recorded and bile culture performed. Intravenous cefmetazole was administered for anti-infection, potassium chloride for supplementation, ulinastatin and gabexate to inhibit inflammatory mediator release, and oral thrombin powder for hemostasis. External TCM application of mirabilite, *Evodia rutaecarpa*, and radish seed to the abdomen was applied to strengthen the spleen, resolve dampness, and warm the middle to relieve pain. Qingyi Plaster and acupoint embedding therapy were continued. Blood routine and serum amylase levels were rechecked on day 4 (post-ERCP day 2), day 5 (post-ERCP day 3), and day 7 (post-ERCP day 4) of admission. The patient showed improved condition and was discharged on day 9 (post-ERCP day 6).

2.1 Nursing Assessment

2.1.1 Self-Care Ability Assessment According to the Barthel Index rating scale: total independence (no care needed) = 100 points; mild dependence (partial care needed) = 61-99 points; moderate dependence (mostly needs care) = 41-60 points; severe dependence (total care needed) $ $40 points. Specific assessment details are shown in Table 1 .

2.1.2 Fall/Bed Fall Risk Assessment Based on the Morse Fall Risk Assessment Scale, the first step involves clinical judgment of fall risk. When patients do not meet any criteria in the clinical judgment method, the Morse Fall Risk Assessment Scale is applied, where higher scores indicate greater risk. Low risk: <25 points; moderate risk: 25-45 points; high risk: >45 points. Specific assessment details are shown in Table 1.

2.1.3 Catheter Risk Assessment This includes evaluation of consciousness, self-care ability, nursing operations, symptoms, mental status, elimination, and catheter type. Based on the total score, risk is classified into three levels: low risk: <10 points; moderate risk: 10-15 points; high risk: >15 points. Specific assessment details are shown in Table 1.

2.1.4 Pressure Injury (Braden) Risk Assessment Using the Braden Pressure Injury Risk Assessment Scale, which includes six items: sensory perception, moisture, activity, mobility, nutrition, and friction/shear force, each scored 0-4 points. Total score $ $12 indicates high risk. Specific assessment details are shown in Table 1.

2.1.5 Nutritional Screening Using the Nutritional Risk Screening (NRS-2002) scale, which includes nutritional status impairment, disease severity, and

age scoring. A score $ $3 indicates nutritional risk. Specific assessment details are shown in Table 1.

2.1.6 Pain Assessment Using the Numerical Rating Scale (NRS): 0 = no pain; 1-3 = mild pain (does not affect sleep); 4-6 = moderate pain (affects sleep); 7-9 = severe pain (cannot sleep or wakes from pain); 10 = excruciating pain. Specific assessment details are shown in Table 1.

2.1.7 Venous Thromboembolism (Padua) Risk Assessment Using the Padua Risk Assessment Scale: 0-3 points = low risk; $ $4 points = high risk. Specific assessment details are shown in Table 1.

2.1.8 Abdominal Distension Assessment Using a numerical rating scale: 1 = no abdominal distension discomfort; 2 = mild distension without activity or mood impact; 3 = obvious discomfort; 4 = strong discomfort affecting mood; 5 = extremely strong discomfort preventing activity completion and severely affecting mood. Specific assessment details are shown in Table 1.

2.1.9 Nausea and Vomiting Grading According to WHO grading standards: Grade 0 = no nausea or vomiting; Grade I = nausea only; Grade II = transient vomiting, not more than once; Grade III = vomiting requiring treatment, not more than twice; Grade IV = uncontrollable vomiting, difficult to control even with medication, vomiting three times or more. Specific assessment details are shown in Table 1.

2.2 Nursing Diagnoses

1. Pain: related to pancreatic inflammatory infiltration
2. Altered comfort: related to abdominal distension, pain, nausea, and vomiting
3. Risk for nutritional imbalance (fluid deficit): related to NPO status, fluid loss from nausea/vomiting, and pancreatic exudate
4. Poor compliance: related to pain
5. Risk for catheter dislodgement: related to catheter discomfort and poor compliance

2.3 Nursing Plan

- Pain control and relief
- Promotion of gastrointestinal function recovery
- Dietary and nutritional support
- Enhancement of disease awareness
- Complication prevention and management
- Discharge guidance and follow-up

2.4 Nursing Interventions

2.4.1 Condition Monitoring Conduct NRS assessment and documentation. Position the patient in left lateral or semi-recumbent position to promote pancreatic juice drainage and localize inflammation. Apply Qingyi Plaster plus TCM external application to purge heat from bowels and warm the middle to relieve pain. Use Qingyi Plaster plus TCM external application to reduce pancreatic edema and exudate, warm the middle and strengthen the spleen, and use acupoint embedding to regulate gastrointestinal function and improve nausea/vomiting. During acute episodes, maintain NPO status; during remission, implement dietary control with gradual diet progression (clear liquid → semi-liquid → soft diet). Show concern for the child's emotional and psychological status, using positive distractions. Provide health education about pancreatic divisum, pancreatitis prevention, treatment, and rehabilitation, along with medication guidance. Implement condition monitoring and documentation, reporting abnormalities to physicians immediately. Provide detailed discharge guidance covering daily living, diet, and emotional well-being, with regular follow-up visits and telephone follow-up to assess recovery and provide necessary guidance. Closely monitor vital signs, abdominal symptoms (including pain characteristics, severity, frequency, distension, nausea, vomiting), bowel and urine conditions, and dynamic changes in laboratory indicators such as blood routine, liver/kidney function, electrolytes, and serum/urine amylase, while recording intake and output.

2.4.2 Pain Management Implement pain assessment and documentation, including pain timing, location, characteristics, precipitating factors, and associated symptoms. Administer somatostatin, ulinastatin, and gabexate intravenously as prescribed to inhibit inflammatory mediator release and reduce inflammatory pain. Provide psychological comfort through music and animation to distract attention and reduce pain sensitivity.

2.4.3 Emotional Regulation Provide sufficient humanistic care, explain disease progression and treatment progress, establish good nurse-patient relationships, enhance treatment security for both child and parents, and strengthen confidence.

2.4.4 Dietary and Nutritional Support Due to post-ERCP pancreatitis, the acute episode required NPO status, easily causing nutritional imbalance (fluid deficit). Nutritional support during this phase primarily relied on parenteral nutrition (PN) via intravenous infusion to ensure daily fluid intake. The remission phase diet was strictly implemented in stages based on improvement of pancreatitis symptoms and decreasing serum amylase levels, preventing gastrointestinal function damage and shortening recovery time. The diet followed a progressive opening principle of clear liquid → semi-liquid → soft diet. On post-ERCP day 2, clear liquids were gradually introduced, starting with water then gradually adding lotus root starch orally at 50-100 ml per dose, 2-3 times

daily. On post-ERCP day 4, low-fat semi-liquid diet was prescribed, including plain noodle soup and thin rice porridge, with controlled portions.

2.4.5 Nasobiliary Drainage Catheter Care Securely fix the nasobiliary catheter, connect to negative pressure drainage with the position below nasal level to prevent retrograde infection. Instruct the child to protect the catheter during activities and sleep to prevent accidental dislodgement. Maintain catheter patency and effective drainage, change the negative pressure drainage device daily, and observe/document drainage fluid color, consistency, and volume. Immediately notify physicians if drainage volume suddenly decreases or stops.

2.4.6 Traditional Chinese Medicine Nursing 2.4.6.1 Qingyi Plaster Acupoint Application
The self-made Qingyi Plaster uses TCM herbs (80g mirabilite, 30g raw rhubarb, 10g prepared kansui, 5g borneol) ground into powder and mixed into a paste, spread evenly on 20$\times$15 cm oil paper in a symmetrical crescent shape, with effects of clearing heat, resolving dampness, warming the middle, strengthening the spleen, cooling blood, and promoting bowel movements. Procedure: (1) Before application, assess the ward environment and temperature, abdominal distension and pain status, and skin condition at the application site; explain the procedure purpose and obtain cooperation. (2) Assist the patient to a comfortable position and clean local skin before application. (3) Apply plaster to Zhongwan (CV12), Shenque (CV8), Tianshu (ST25), Qihai (CV6), and Guanyuan (CV4) acupoints for 6-8 hours; observe for allergic skin reactions during application and discontinue immediately if allergy occurs, once daily for 3 days as one course. (4) Discontinue when abdominal distension and pain are significantly relieved per physician's order.

2.4.6.2 Traditional Chinese Medicine External Application
The TCM external application uses herbs (2000g mirabilite, 300g radish seed, 300g *Evodia rutaecarpa*) placed in cloth bags and evenly applied to the abdomen to promote absorption of peritoneal exudate and inflammation, reduce inflammation and pain, stimulate intestinal peristalsis, and relieve abdominal distension and pain. Procedure: (1) Before application, assess the ward environment and temperature, abdominal distension and pain status, and skin condition at the application site; explain the procedure purpose and obtain cooperation. (2) Assist the patient to a comfortable position and clean local skin before application. (3) Place mirabilite, honeysuckle, and *Evodia rutaecarpa* in a cloth bag and seal; evenly spread the medicine in the bag according to abdominal area, with thickness of 0.2-0.5 cm, extending 1-2 cm beyond the mid-upper abdomen, secured with elastic band at appropriate tightness. (4) Apply for 6-8 hours; observe for allergic reactions during application. When mirabilite completely absorbs moisture and becomes deliquescent, the cloth bag becomes wet and crystallized and should be replaced. Apply twice daily for 3 days as one course. (5) Discontinue when abdominal distension and pain are significantly relieved per physician's

order.

2.4.6.3 Acupoint Embedding

Special ring-shaped intradermal sterile needles are inserted and fixed at acupoint locations, retained for a certain period to provide gentle and prolonged stimulation to regulate meridian and organ functions. Procedure: (1) Before embedding, assess ward environment and temperature, inquire about symptoms, examine constitution, skin condition at embedding site, and pain tolerance; assess history of needle fainting, trauma, allergies, and sensitivity. (2) Assist the patient to a comfortable position. (3) Select Zusanli (ST36) acupoint, fully expose embedding site skin, disinfect skin, then implement needle embedding. After embedding, press and fix with fingers. During retention, intermittently press the embedded needle for 1-2 minutes to enhance stimulation and improve efficacy. (4) Treatment course: once daily for 3 days as one course. (5) After embedding, fix securely; avoid water immersion at embedding site; observe for needle fainting, petechiae, rash, inflammation, damage, or stabbing sensation around the acupoint during embedding period.

2.5 Nursing Effect Evaluation

After intervention, the patient's pain score decreased from 5 to 0, abdominal distension score decreased from 5 to 0, and nausea/vomiting grade decreased from Grade IV to Grade I. Laboratory re-examination results are detailed in Table 2 . The patient was discharged on March 5 and followed up on days 7 and 14 post-discharge, showing good recovery with normalized laboratory indicators, no discomfort symptoms, and high compliance with home care instructions.

ERCP is both the gold standard diagnostic tool and a primary treatment modality for pancreatic divisum. The main ERCP techniques for treating PD include endoscopic minor papillary sphincterotomy and endoscopic pancreatic stent placement (EPS), with EPS currently being the preferred clinical treatment. In this case, the child underwent EPS, but the stent dislodged postoperatively, causing minor papilla edema, dorsal pancreatic duct narrowing at its origin, and extreme difficulty with repeated attempts to cannulate the dorsal duct. The stent could not be advanced into the pancreatic duct via the major papilla. Therefore, postoperative acute pancreatitis likely resulted from invasive manipulation, repeated cannulation attempts, and high injection pressure during contrast imaging. Acute pancreatitis (AP) most commonly damages the gastrointestinal tract, leading to gastrointestinal dysfunction (GID) that can trigger multiple organ dysfunction syndrome and inflammatory responses, with abdominal distension and pain being the most typical manifestations. Current standard Western medical treatment primarily involves fasting, gastrointestinal decompression, anti-infection therapy, and pancreatic enzyme secretion inhibition. However, pediatric patients often face challenges including poor drug tolerance, low compliance, slow pain relief, and delayed gastrointestinal function recovery. Dai Yunfei, Shang Dong, et al., based on the "purging bowels and clearing heat" theory, demonstrated that this approach can shorten pain re-

lief time and reduce medication dependency risk. Research indicates that rapid relief of GID in AP patients facilitates disease recovery and prognosis. In addition to active pharmacological treatment, TCM nursing interventions combined with conventional care demonstrate good efficacy.

In this case, post-ERCP acute pancreatitis occurred. Traditional Chinese medicine considers acute pancreatitis as belonging to "spleen heart pain" and "hypochondriac pain" categories, primarily caused by liver qi stagnation, spleen dysfunction, and impaired bowel qi descending. TCM treatment focuses on purging the bowels, clearing heat, and removing blood stasis. Our hospital's renowned senior TCM practitioner Professor Cai Gan, through extensive clinical practice and under the guidance of the "spleen governing four organs" academic thought, developed the clinical treatment principle of "treating the spleen to calm five organs," emphasizing spleen-stomach protection as fundamental and bowel purging with heat clearance as the principle. Both Qingyi Plaster and external TCM formulas follow syndrome differentiation and treatment principles, with mirabilite as the main herb. Its primary component, sodium sulfate, enters the large intestine meridian with effects of softening hardness, dispersing masses, reducing swelling, anti-inflammation, and promoting qi movement. Modern pharmacology considers mirabilite to have strong water-absorbing capacity, promoting exudate absorption, accelerating lymphatic circulation, enhancing reticuloendothelial cell phagocytic function, and improving anti-inflammatory effects. Combined with raw rhubarb to clear liver-gallbladder and purge bowels, kansui to promote bowel movement, radish seed to regulate qi and reduce distension, *Evodia rutaecarpa* to regulate qi and relieve pain, and borneol to clear heat and relieve pain, the formula collectively achieves the effect of clearing damp-heat from liver-gallbladder, regulating qi, and purging the bowels.

"Where the acupoint resides, the treatment resides." Qingyi Plaster selects Zhongwan, Shenque, Tianshu, Qihai, and Guanyuan acupoints around the umbilical abdomen. Through acupoint stimulation, it inhibits pancreatic enzyme activity and regulates gastrointestinal peristalsis. Zhongwan serves as a pathway connecting upper, middle, and lower jiao, with effects of regulating stomach qi. Shenque, as the gateway of original spirit and sea of meridian qi, functions to strengthen the spleen, promote water metabolism, harmonize stomach and intestines, and disperse stagnation. Tianshu, the gathering point of the large intestine, excels at unblocking bowel qi. Qihai circulates along the conception vessel as the collection point of ancestral qi, with functions of generating yang qi and regulating lower jiao qi movement. Guanyuan, the gathering point of the small intestine, warms yang, consolidates collapse, and tonifies qi. Combined use of these acupoints warms meridians, unblocks collaterals, harmonizes qi and blood, and purges heat from the bowels. Acupoint embedding selects bilateral Zusanli. As a point of the foot yangming stomach meridian and the root of postnatal essence, Zusanli tonifies organ deficiency, lifts clear and lowers turbid, and guides stomach qi. Modern research shows that stimulating Zusanli not only increases gastrin content and accelerates gastrointestinal peristalsis to relieve

abdominal distension, but also achieves pain relief and emotional regulation through central mechanisms.

In summary, the advantages of TCM nursing interventions in this case include: (1) Both Qingyi Plaster and TCM external application work through transdermal absorption, delivering medicinal power directly to intestinal tracts. Through osmotic pressure, they absorb intra-abdominal exudate, reduce intestinal wall edema, lower intra-abdominal pressure, and promote gastrointestinal function recovery. Simultaneously, they promote absorption of peripancreatic fluid, reduce inflammatory response in acute pancreatitis, and decrease pancreaticobiliary duct pressure. Combined use rapidly relieves abdominal distension and pain, shortening disease course. (2) Acupoint embedding needles only reach subcutaneous tissue without deep penetration, being nearly painless with extremely high safety. Through bidirectional regulation via acupoint stimulation, it produces continuous, gentle needle sensation effects, long-term supporting upright qi, ascending-descending qi movement, and unblocking meridians to relieve pain. (3) All three TCM techniques employ non-invasive interventions that are simple, safe, effective, with minimal adverse reactions, making them easily acceptable to pediatric patients with high compliance, thus facilitating recovery.

Limitations: (1) Qingyi Plaster contains raw rhubarb, which is yellowish-brown with a strong odor that may cause patient aversion. (2) Mirabilite external application tends to crystallize and harden after deliquescence, affecting patient comfort if not removed promptly. (3) Variations in acupoint location accuracy and pressing force among operators may lead to inconsistent treatment effects. (4) Current integrated TCM-Western medicine nursing represents only a single case observation of pediatric PD complicated by AP, requiring expansion to more clinical cases to provide more scientific and reliable intervention protocols.

Patient Consent: Publication of this case report was approved by the patient and family.

Conflict of Interest Statement: The authors declare no conflicts of interest.

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Note: Figure translations are in progress. See original paper for figures.