



## ILEO-COLIC INTUSSUSCEPTION; IS HYDROSTATIC REDUCTION WORTH CONSIDERING TILL LATE?

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**ABSTRACT... Objective:** To evaluate the success rate of hydrostatic reduction of intussusception and incidence of complications in late presenting cases. **Study Design:** prospective study. **Place and duration of study:** Study was carried out in Armed Forces Institute of Radiology and Imaging Rawalpindi and different Combine Military Hospitals during last 5 years. **Materials and Methods:** All the children up to 2 years age with diagnosis of ileo-colic intussusception and 3 days or less history of onset of symptoms were included in the study. Patients with signs of perforation, suspicion of lead point or long intussusceptum protruding through rectum were excluded. After plain film evaluation, thin barium was instilled through Foleys catheter under fluoroscopic guidance. Rule of 3 was followed and reduction was considered successful when contrast refluxed into terminal ileal segment. Follow up plain x-ray and ultrasound was done after 48 hours to rule out recurrence. **Results:** Hydrostatic reduction was successful in 18 out of 21 patients collected during last five years. Reduction was incomplete in one case while perforation was observed in 2 cases. These complications were observed in the largest group (52%) of patients reporting on 3rd day of onset of symptoms. A significant number (38%) of patients reached the hospital within 48 hours. Only 2 (10%) patients presented in first 24 hrs but uneventful reduction was possible in later two groups. **Conclusions:** Careful hydrostatic reduction in cases of ileo-colic intussusception reporting within 72 hrs will reduce hospital stay and patient morbidity in most of the cases.

**Key words:** Intussusception, Hydrostatic reduction, Saline enema

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### INTRODUCTION

Intussusception is telescoping of a segment of bowel into the other segment adjacent to it. Acute intussusception is one of the most common causes of acute abdomen in infants and toddlers between 6-24 months age<sup>1</sup>. Ileo-colic intussusception is most common type in children as well as adults. Most of the cases are idiopathic however lead point may be present in older children which cause secondary intussusception. Condition can be diagnosed on plain x-ray, ultrasound and CT scan. Hydrostatic reduction under ultrasound or fluoroscopic guidance is a useful well established alternative to surgery. Surgery is generally indicated as first line treatment in cases presenting later than 48 hours after onset of symptoms as hydrostatic reduction is usually not successful<sup>1-3</sup>. Other indications for surgery are clinical or radiological evidence of gut perforation, signs of impending perforation, protrusion of gut loops through rectum and in

patients with any lesion acting as lead point for intussusception.

### OBJECTIVE OF STUDY

In our social circumstances the patients report quite late. Results of hydrostatic reduction in intussusception in early presenting cases are better and patients presenting late are usually discouraged to undergo hydrostatic reduction specifically later than 24 hours<sup>1-3</sup>.

We conducted this study to see the success rate of hydrostatic reduction and incidence of complications in late presenting patients as compared with cases that come to hospital early.

### PATIENTS AND METHODS

This study was carried out in different Combined Military Hospitals (CMH,s) and Armed Forces Institute of Radiology and Imaging (AFIRI) Rawalpindi. All the children up to 2 years of age

diagnosed having intussusception and onset of symptoms for 03 days or less were included in this study. Patients with signs of intestinal perforation or suspected of having some nodular mass lesion acting as lead point for intussusception were excluded from study. The patients in whom the gut loop was found protruding through rectum were also not included in the study. Plain x-ray was done in all cases before the procedure to rule out perforation. Procedure was performed under fluoroscopic guidance using thin fluid consistency barium sulphate in water as contrast medium and pushing agent. Rule of 3 was followed which narrates that 3 attempts to be done, every attempt consisting sustained barium column pressure for 3 minutes duration and 3 minutes interval between successive attempts. Attempt was considered successful when there was reflux of contrast medium into terminal part of ileum.

Follow up of every patient was done after 48 hours with the ultrasound and plain x-ray of abdomen to rule out recurrence of intussusception. Availability of surgical team was ensured before the procedure to deal with possible complication of perforation, if occurs.

## RESULTS

Hydrostatic reduction was attempted on 21 consecutive patients in last five years. Successful reduction was possible in 18 patients. In one case

of ileocolic intussusception incomplete reduction could be made and patient finally underwent surgical reduction. In two patients perforation was the reason for cessation of procedure. These patients were immediately shifted to Operation Theater and after surgery both of them made un-eventful recovery. In two patients' small filling defects persisted in the cecum in the region of ileo-caecal valve with minimal reflux of contrast medium into ileum but on follow up obstruction and intussusception were found to be relieved. All the 18 patients in which hydrostatic reduction was successful were observed and followed for 72 hours after the procedure. Follow-up ultrasound after 24 hours did not show recurrence of intussusception in any patient.

Considering the time duration of reporting to hospital after onset of symptoms three groups of patients were made i.e. 24 hour, 48 hour and 72 hour duration patients' groups. Two (10 %) patients presented in first 24 hour, 8 (38%) patients presented in 24 to 48 hours and 11 (52%) patients reported in 48 to 72 hours after the onset of symptoms. The complication of perforation or half success of procedure was seen in this last group but still the success rate of procedure was 72.8 % (8 out of 11 patients) in this group. In other two groups successful reduction was possible in all cases, that is 100 % success rate.

Duration of symptom	No. of patients	Successful reduction	Perforation	No success No complications
Up to 24 hrs	2 (10%)	2 (100%)	-	-
Up to 48 hrs	8 (38%)	8 (100%)	-	-
Up to 72 hrs	11 (52%)	8 (72.8%)	2 (18%)	1 (9%)

**Table.**



Fig-1. Plain film--crescent sign.



Fig 2: Coiled spring appearance on Barium enema.



Fig 3: Intussusception up to sigmoid colon.



Fig 4: Intussusception- filling defect in head of contrast column.

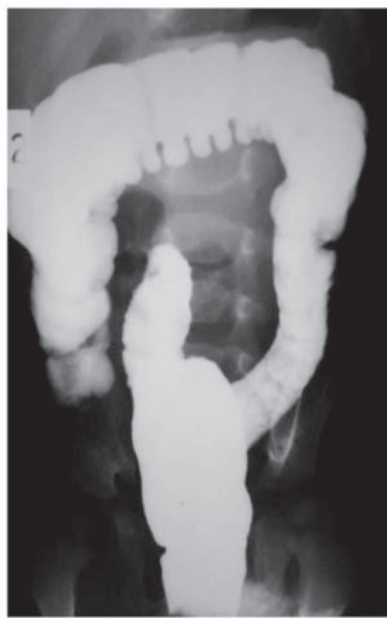


Fig 5: After reduction filling defect due to edematous valve. Patient made uneventful recovery.



Fig 6: Perforation during reduction. Patient underwent surgery

**DISCUSSION**

Idiopathic ileo-colic intussusception is commonly recognized in infants and young children up to 2 years of age. In clinically suspected patients now a day's diagnosis is usually made on ultrasonography. Barium enema in these patients is

planned to confirm the diagnosis and followed by attempt of hydrostatic reduction as a continuation of procedure. Hydrostatic reduction is a well-recognized and acceptable procedure in management of intussusception but the controversy is whether this procedure should be

attempted after 48 hours of onset of symptoms or not. Generally surgeons opt for surgery in patients presenting after 48 hours of onset of symptoms considering that hydrostatic reduction in these patients is usually not successful and chances of perforation are very high.

In our study 100% success rate of hydrostatic reduction of intussusception with barium enema in patients presenting up till 48 hours after onset of symptoms is very encouraging and comparable and even better than a similar study done in Khyber teaching hospital Peshawar, Pakistan.<sup>10</sup> Extraordinary good results may be attributed to relatively small volume of patients but even then it shows that hydrostatic reduction of intussusception is very successful alternative to surgery in these young patients who still have a long way to go in life. 73% success rate of procedure in patients presenting between 48 and 72 hours of onset of symptoms with incomplete reduction in 9% and incidence of perforation in 18% is comparable with a similar study published in BMJ<sup>8</sup>. Even incomplete reduction of intussusception is sometimes helpful for surgeon on subsequent surgery when intussusception head moves to a more favorable position. 18% risk of perforation in late presenting patients is comparable with international data and is considered acceptable when any how surgery has to be performed.

Air / carbon dioxide insufflation instead of barium-enema is being used in some centers for reduction of intussusception considering its advantage in case of perforation having less risk of barium induced chemical peritonitis. Air insufflation with maintaining a sustained intra-colonic pressure in this procedure requires special equipment which is not yet available in our country. Moreover a disadvantage is that ileo-caecal valve is obscured by the air<sup>7</sup>.

Normal saline enema under ultrasound guidance is another alternate technique for intussusception reduction with advantage of no radiation hazard and reduced chances of peritonitis in case of perforation but disadvantage is that perforation

may remain unnoticed during the procedure.

In last 5 yrs only 21 cases could be collected. The reason for less no of cases was lack of awareness and confidence of clinicians in the procedure thinking that perforation is a common complication and may occur very often. Statistics of this study will help to build up the confidence of patient and treating physician. Complications of procedure, other than perforation, include hypothermia and volume over load. These can be avoided with careful conduct of procedure. None of these were seen in our cases.

Average hospital stay of patients after successful hydrostatic reduction of intussusception was not more than 24-48 hours and that too without any additional expenses as well as morbidity.

## CONCLUSIONS

Considering the incidence of post op mortality and morbidity and relatively long hospital stay in the patients of intussusception after surgery, a careful attempt of hydrostatic reduction in close collaboration with surgical team can be made in every case presenting within 72hours of onset of symptoms. In patients presenting between 48 – 72 hours, air-insufflation or normal saline enema can be considered as an alternative to standard barium enema to avoid chemical peritonitis in case of perforation.

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The **truth** may hurt for  
a little while but a lie hurts forever.

Anonymous

