

## **EARLY ENTERAL FEEDING FOLLOWING SMALL GUT ANASTOMOSIS; AN INSTITUTION BASED PROSPECTIVE STUDY**

### **İnce barsak anastomozlarını takiben erken dönem enteral beslenme; Kurumsal bir prospektif çalışma.**

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#### **ABSTRACT**

Gut anastomosis is one of the frequently performed surgeries in both emergency and elective setup. As a conventional practice following gut anastomosis, patients are kept "nil by mouth" till bowel sounds return. Recently great emphasis has been paid on early enteral feeding within 6 to 24 hrs after operation. The aim of our study was to see whether early enteral feeding within 24 hrs of small gut anastomosis is tolerable and beneficial to the patient. Feasibility, safety and efficacy of early enteral feeding after small gut anastomosis were assessed in terms of morbidities like incidence of vomiting, rate of anastomotic leak, infective complication and length of postoperative hospital stays in days. Among our 51 patients 15 (29.41%) were operated in emergency and 36(70.59%) by elective means. All the 51 patients were given early enteral feeding with clear water 18 hours after gut anastomosis. Out of 51 patients only 5 (9.80%) developed postoperative nausea and vomiting. The mean time of appearance of IPS was 1.19 days (SD 0.49). Mean time of passage of flatus is 1.84 days (SD 0.53). Three patients (5.88%) out of 51 developed clinical evidence of anastomotic leakage. The mean duration of hospital stay was 8.84 days (SD2.9). Two (3.92%) out of 51 patients of gut anastomosis die. In conclusion, the conventional wisdom of withholding enteral feeds for prolonged periods to coincide with the appearance of peristaltic sounds might not stand the test of time and early feeding is beneficial to the patients.

**Key words:** Small bowel, anastomosis and enteral feeding.

#### **ÖZET**

Barsak anastomozu acil ve elektif cerrahide sık yapılan işlemlerden birisidir. Genel cerrahi pratiğinde, ameliyat sonrasında hastalara barsak sesleri duyuluncaya kadar ağızdan gıda verilmez. Son zamanlarda ameliyat sonrasındaki 6-24 saat içerisinde yapılacak erken enteral beslenmenin önemi vurgulanmaktadır. Bu çalışmada barsak anastomozlu hastalarda ameliyat sonrası 6-24 saatlik dönemde yapılan erken enteral beslenmenin sonuçları gözlemlenmiştir. Barsak anastomozu sonrasında yapılan erken dönem enteral beslenmenin uygulanabilirliği, güvenilirliği ve etkinliği bakımından değerlendirilmek amacıyla ameliyat sonrasında görülen bulantı-kusma, anastomoz açılma oranı, enfeksiyon durumu ve hastanede kalma gibi morbiditeyi tanımlayan parametrelere bakıldı. 51 hastalık serimizde, 15 (%29.14) vaka acil şartlarda 36 (%70.59) vaka ise elektif şartlarda ameliyat edildi. Hastaların hepsine ameliyattan 18 saat sonra su verildi. Yalnız 5 (%9.8) hastada bulantı-kusma saptandı. Barsak sesleri 1.19 günde (SD 0.49), gaz çıkarma 1.84 günde (SD 0.53) başladı. Üç hastada (%5.88) anastomoz açılması saptandı. Hastanede kalma süresi ortalama 8.84 gündü (SD 2.9). Hastalardan ikisi (%3.92) öldü. Sonuç olarak; geleneksel olarak enteral sıvı verilmeyen hastalarla verilenler arasında komplikasyonlar bakımından anlamlı bir fark olmadığı, erken dönemde yapılacak enteral beslenmenin faydalı olduğu söylenebilir.

**Anahtar kelimeler:** İnce barsak, anastomoz ve enteral beslenme.

## INTRODUCTION

Gut anastomosis is one of the frequently performed surgeries in both emergency and elective setup. It is mostly done due to traumatic rupture, benign or malignant perforation or obstruction and in certain other inflammatory conditions. As a conventional practice following gut anastomosis, patients are kept "nil by mouth" till bowel sounds return. During this time period, patient remains with nasogastric tube for decompression of stomach and providing rest to the gut. Postoperative gut dysmotility mainly affects stomach and colon along with small gut in a lesser magnitude. Recently great emphasis has been paid on early enteral feeding within 6 to 24 hrs after operation. However in postoperative period, sometimes nutrition of the patient is maintained by total parenteral nutrition (TPN). Except being of high cost, TPN has its own complications like infection, metabolic disturbances and immunological disturbances. Ideas behind early enteral feeding are due to many reasons like, gut secretes and reabsorbs about 7 liters of fluid per day irrespective of oral intake, so giving 'rest to gut and protecting anastomotic site' is based on a false notion and it recovers from dysmotility within 24 to 48 hours in case of stomach and colon while 4 to 6 hours in case of small bowel (1,2). Starvation reduces the collagen content in the scar tissue and diminishes the quality of healing (3), whereas feeding reverses mucosal atrophy induced by starvation and increases anastomotic collagen deposition and strength (4). So, studies are now being conducted regarding feasibility of early enteral feeding.

The aim of this study was to see whether early enteral feeding within 24 hrs of small gut anastomosis is tolerable and beneficial to the patient. Feasibility, safety and efficacy of early enteral feeding after small gut anastomosis were assessed in terms of morbidities like. Incidence of vomiting, rate of anastomotic leak, infective complication and length of postoperative hospital stays in days.

## MATERIALS AND METHODS

It was a prospective experimental epidemiological study. Fifty one (23 female and 28 males) consecutive patients between 31 to 50 years (mean age 46.35 yrs) from January 2010 to June 2011 who have undergone gastrointestinal surgery with small gut anastomosis and received feeding proximal to anastomotic site within 24 hrs following operation, either orally or through nasogastric tube were included in this study. All the operations were done under general anaesthesia.

The patients with ASA grade IV to VI, Relaparotomies following anastomosis, postoperative patients who required ventilator support and whose operating time was more than 4 hours were excluded from the study population.

The patients were followed in the postoperative period for appearance of bowel sounds, passage of flatus and stool, vomiting, any wound infection, chest infection, abdominal distension, anastomotic leak, duration of postoperative hospital stay, mortality and costeffectiveness.

All the 51 patients were given early enteral feeding with clear water 18 hours after gut anastomosis. The diet started with 30-45 ml of clear water per hour in the 1st postoperative day. From the 2nd postoperative day, liquid diet in the form of tea, fruit juice, protein powder dissolved in milk and if patient could afford elemental diet, was given. The amount of the diet was 500 ml 4 hourly. From 3rd postoperative day, semisolid and solid food was given according to the response of the patient. They were followed in postoperative period for appearance of bowel sounds, passage of flatus and stool, vomiting, any wound infection, chest infection, abdominal distension, anastomotic leakage, duration of postoperative hospital stay and mortality.

Data is expressed as mean +/- SD for continuously distributed variables and in absolute numbers and percentages for the discrete variables.

## RESULTS

Among the 51 patients 15 (29.41%) were operated in emergency and 36 (70.59%) by elective means. 35 (68.62%) patients operated due to benign cause and 16 (31.37%) due to malignant lesions. During operative procedure, out of 51 patients, only 4 (7.84%) patients were found to have gangrenous gut.

Post operative data;

Out of 51 patients only 5 (9.80%) developed post operative nausea and vomiting. The mean time of appearance of IPS was 1.19 days (SD 0.49). Mean time of passage of flatus is 1.84 days (SD 0.53). Out of 51 patients, 7 (13.72%) developed wound infection. Out of the 7 patients with wound infection, 3 suffered from major wound infection and other 4 from minor wound infection. Major wound infection required repeated wound debridement in operation theatre along with proper antibiotic therapy and regular dressing at wards, whereas minor wound infection required regular dressing at wards with proper antibiotic therapy. 4 patients (7.84%) out of 51 were suffering from chest infection. They were treated with proper antibiotics. 3 patients (5.88%) out of 51 developed clinical evidence of anastomotic leakage. One out of 51 patients required reexploration for clinically evident anastomotic leakage. The mean duration of hospital stay was 8.84 days (SD 2.9). Two (3.92%) out of 51 patients of gut anastomosis died.

## DISCUSSION

Traditionally after abdominal surgery, the passage of flatus or bowel movement has been the clinical evidence for starting an oral diet. It is cus-

tomary to keep the patients "nil by mouth" after gastrointestinal anastomosis till patient passes flatus. Adequate nutrition has always been a major goal in postoperative care. It is also being increasingly recognized now that withholding oral feeds for few days after surgery in such cases leads to nutritional depletion and its consequences. Lewis et al, in his meta-analysis of 11 studies along with some other studies have examined the role of early feeding after gastrointestinal anastomosis and found that it improved immunocompetence, decreased septic complications, improved wound healing and possibly improved anastomotic strength (5-9).

Oral feeding was started within 24 hours of surgery and it was well tolerated in 46 (90.19%) patients. Remaining 5 patients (9.8%) could not tolerate early oral feeds. Oral feeding had to be withheld for next 12-24 hours, and then all the patients could tolerate feed in small quantities. In other similar studies in the past, feeding was started 48-72 hours following operation and patients tolerated feed (10-13). The tolerance to early oral feed in the present study is comparable to the results of previous studies. In a study conducted by Stewart et al (10), tolerance to early oral feed is much less (65%) in comparison to other studies, possibly due to the fact that feed was started within 4 hours of surgery when residual effect of anaesthetic drugs is still present. However another important observation is that the tolerance to oral feeds is same in present as well as most of the previous studies despite the fact that early oral feed was started within 24 hours in the present study in comparison to the other studies where oral feed was started within 24-72 hours of surgery. This indicates that oral feed can safely be started within 24 hours of surgery with good tolerance because effect of anaesthetic drugs is over by that time. In the present study, only 9.80% patients complained of nausea and vomiting after the start of oral feeds. The percentage of patients who had nausea / vomiting in other similar studies is comparable with the present study. Malhotra et al (14) found the incidence of vomiting to be 13% in their study. Intestinal peristaltic sounds appeared in a significantly shorter period of time (mean 1.19 days; SD 0.49). Marwah et al (15) shows mean time for appearance of bowel sounds to be  $1.08 \pm 0.27$  days in early fed group. In the present study 7 patients (13.72%) had wound infection. The results of meta-analysis of 11 studies by Lewis et al (5) have also shown that incidence of wound infection is 3-30% in early fed group. In the present study 5.88% cases had anastomotic leak. Out of three cases first patient had gastrojejunostomy and the leakage was managed conservatively but the patient died on 8th postoperative day due to severe sepsis and dyselectrolyteamia. The second case was had ileostomy closure and found to have anastomotic leakage on 4th postoperative day. This patient had to be re-explored and was managed with a repeat ileostomy. The third patient had un-

dergone distal gastrectomy and gastrojejunostomy and the leak diagnosed on 5th postoperative day which was managed conservatively. In the past, various workers have observed that wound healing as well as anastomotic strength improves in patients of early oral feeding (7,9). The 71 previous studies although mention incidence of postoperative leak but there are no details regarding fate and further management of these patients. Four patients (7.84%) encountered postoperative respiratory tract infections. In the meta-analysis conducted by Lewis et al (5) the incidence of pneumonia was less and the results were not statistically significant. In the present study the mean duration of postoperative hospital stay was 8.84 days (SD 2.90). Malhotra et al (14) showed the mean postoperative hospital stay of 10.59 days. In the meta-analysis conducted by Lewis et al duration of postoperative hospital stay was reduced by approximately one day in 8 out of 11 studies. Duration of hospital stay in present study is comparable with the previous studies except the study by Kamei et al where postoperative hospital stay was much longer. It is possibly due to the fact that Kamei et al (16,17) conducted their study in patients undergoing radical gastrectomy for carcinoma stomach that required prolonged hospitalization. Gianotti et al (18) showed that patients undergoing major abdominal operation may be safely and effectively managed with new protocols that allow early return to oral feeding, enhance recovery and wellbeing, reduce hospitalization and improve outcome after surgery. Marwah et al (16) show the mean hospital stay to be  $5.8 \pm 3.09$  days in early fed group. These 72 new strategies have substantially reduced the need of perioperative artificial nutritional support. One significant observation made by all these workers including present study is that postoperative hospital stay is significantly shorter in patients receiving early enteral feeding. It is possibly due to the fact that early feeding helps in early bowel movements, faster recovery, less postoperative complications leading to early discharge from the hospital.

In conclusion, it can be said that the conventional wisdom of withholding enteral feeds for prolonged periods to coincide with the appearance of peristaltic sounds might not stand the test of time and early feeding is beneficial to the patients. However further large volume studies will be required to justify such an approach.

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