African Journal of One Health

ISSN: 3115-4077 (**PRINT**): (**ONLINE**) **Research Article**

Open Access Journal available at: https://ajoh.org.ng/index.php/data

DOI: https://dx.doi.org/

EFFECT OF SUPPLEMENTAL OXYGEN ON SURGICAL SITE INFECTION AND POST-DISCHARGE RECOVERY IN CHILDREN WITH TYPHOID INTESTINAL PERFORATION: A ONE HEALTH PERSPECTIVE ON A RANDOMIZED TRIAL

Nasiru Musa[1], Nuhu Abdullahi Koko[1], Abubakar Yahayya[1], Christopher Suiye Lukong[1], Basheer Abdullahi Jabo[1], Abdulrasheed Adegoke Nasir [2], Abdullahi Aitek Abdulkareem[3], Muhammad Abdullahi[3], Abdulazeez Muhammad[4], Habibullah Adamu[4]

Article Info

Accepted: 01/12/2025

1. Paediatric Surgery unit, Department of Surgery, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Sokoto State, Nigeria.
2. Paediatric Surgery Unit, Department of Surgery, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria.
3. Deparrment of Anaesthesia, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Sokoto State, Nigeria.
4. Deparrment of Community Medicine, Usmanu Danfodiyo University and Usmanu Danfodito University Teaching Hospital, Sokoto, Sokoto State, Nigeria.

***Corresponding author's email:**

nasirudogondaji@gmail.com

Cite this: *Ajoh,2025*, Vol1,i2,

Abstract

Surgical site infection is the commonest hospital acquired infection in surgical patient globally. Surgical site infection (SSI) is one of the most common complications occurring in 49–59% of patients with typhoid intestinal perforation. In recent years, there has been increased interest in the potential clinical benefits of supplemental perioperative oxygen administration in reducing SSI. This study aimed to determine the effect of administering 80% supplemental oxygen in reducing SSI when compared with traditional inspired oxygen concentrations (30% oxygen) in paediatric surgical patients following laparotomy for typhoid intestinal perforation (TIP).This was a prospective, randomized controlled, hospital based study involving 49 paediatric surgical patients, 15 years and below, admitted into our paediatric surgical unit and had laparotomy on account of TIP. Patients were randomly assigned to either 80% supplemental oxygen or 30% oxygen. Supplemental oxygen was administered in the recovery room in the immediate post-operative period for 2 hours via a tight face mask connected to a reservoir. SSI was the primary outcome and was diagnosed using Center for Disease Control (CDC) and prevention criteria. Data collected were entered into a proforma and were analyzed using the Statistical Package for Social Sciences (SPSS) version 20 ($p < 0.05$).Their ages ranged between 4 years and 15 years, mean age was 9.8±3.4 years. Overall nineteen patients (45.2%) were diagnosed with SSI. Eleven patients (52.4%) had SSI in control group compared to 8(38.1%) in study group, ($p= 0.352$). Other post-operative complications such as wound dehiscence, faecal fistula and prolonged ileus were also comparable between the two groups.Overall, increasing concentration of oxygen to 80% does not significantly affect SSI and other morbidities such pneumonia, prolonged ileus and reoperation when compared to traditional 30%.

KEY WORDS: Typhoid intestinal perforation (TIP), Supplemental oxygen, surgical site infection (SSI), Children.

INTRODUCTION

Surgical site infection (SSI) has been defined recently as infection occurring within 30 days after a surgical operation (or within one year if an implant is left in place after the procedure) and affecting either the incision or deep tissue at the operation site (Bratzler 2012). It is the commonest hospital acquired infection in surgical patient globally (Bratzler 2012). Surgical site infection is one of the most common complications occurring in 49–59% of patients with typhoid intestinal perforation (Abatanga et al 1998; Ameh 1999; Ekenze et al 2008).

Hospital acquired infections have received increasing visibility not only among the clinicians, but also among the general public (Hospital compare 2013). In 2007, the cost of inpatient hospital services associated with these infections was in the range of $3.45 - $10.07 billion (Scott 2009).

SSI following laparotomy for TIP causes significant morbidity, increases length of hospital stay, cost of care etc., and efforts made to reduce its incidence included delayed primary wound closure and avoiding use of drain (Usang et al 2009; Nasir et al 2012).

In recent years, there has been increased interest in the potential clinical benefits of supplemental perioperative oxygen administration in reducing SSI(Greif et al 2000; Brar et al 2001; Pryor et al 2004; Belda et al 2005; Meyhoff et al 2009; Bickel et al 2011). Supplemental oxygen has been found useful in appendicitis and colorectal surgeries (Brar et al 2001; Bickel et al 2011); however data on its usefulness in typhoid intestinal perforation is limited.The rationale of hyper oxygenating a patient is to increase partial pressure of oxygen and neutrophil activity at the wound site, with an ultimate decrease in SSIs. A high oxygen partial pressure will increase the production of a number of derived reactive oxygen species including the superoxide anion, hydroperoxyl radical, and hydrogen peroxide (Vinkel et al 2023; Rayyan et al 2025). A number of reactions involving these reactive oxygen species are components of bactericidal host defenses (Babior et al 2002; Vinkel 2023; Rayyan et al 2025). Most of the families in developing countries including Nigeria have no functional health insurance which demands out-of-pocket payments for disease therapies, therefore interventions to decrease SSI rates are urgently needed to reduce cost of health care services. Delayed primary wound closure (Usang et al 2009**)** and avoiding use of peritoneal drain (Nasir et al 2012) were among the intervention made so far, however there is limited data on the effect of supplemental oxygen on SSIs in the West African sub- regions. In the face of these health and economic consequences, this study aimed at determining the effect of supplemental oxygen reducing the risk of SSI following laparotomy for TIP in children, as a strategy to reduce the rate of SSI following laparotomy for TIP in our setting.

METHODOLOGY

STUDY POPULATION

Children, 15yrs and below who were admitted to paediatric surgery unit of UDUTH, Sokoto and had laparotomy on account of TIP within the study period were recruited.Only those who fulfilled the inclusion criteria and whose parents/guardians gave informed consent were recruited for the study

STUDY LOCATION

This study was conducted in the Paediatric surgery unit, Department of Surgery of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto which is a major tertiary health facility in Sokoto State. This unit provides paediatric surgical services for Sokoto State as well as Kebbi, Zamfara and Niger state.

STUDY DESIGN

This was a prospective, randomized controlled study conducted at the Usmanu Danfodiyo University Teaching hospital (UDUTH), Sokoto over 14 months period (January-2018 to February -2019). Patients were randomized in to two groups: 80% supplemental oxygen constituted the "study group" while 30% supplemental oxygen constituted the "control group". Supplemental oxygen was administered at the recovery room.

INCLUSION CRITERIA

The study included children 15yrs and below who had laparotomy for TIP.

Diagnosis of enteric perforation was established by Clinical, Laboratory and Radiological features of typhoid fever and peritonitis as well as presence of perforation at anti-mesenteric border of intestine with acutely inflamed and oedematous intestine intra-operatively.

EXCLUSION CRITERIA

Patients who were unable to maintain oxygen saturation of ≥92% after the procedure on room air and those with chronic obstructive pulmonary disease, immunosuppression as well as those who withheld/refused consent were excluded.

STUDY PROTOCOL

Following diagnosis of enteric fever and intestinal perforation all patients were resuscitated. Thereafter, maintenance IVF(4.3%Dextrose/0.18 saline for patient ≤5years or 5% dextrose in 0.9% saline for patients >5 years) at 100mls/kg/day and broad spectrum antibiotic coverage consisting of metronidazole 7.5mg/kg 8 hourly plus Cefuroxime 100mg/kg in two divided doses were started. Relevant preoperative investigations included complete blood count, blood urea, serum creatinine, serum electrolytes, serum protein as well as chest and abdominal X-ray were requested.

Simple randomization was used for the treatment allocation. A sheet of paper with "study group" (80% supplemental oxygen) or "control group" (30% oxygen) was prepared to desire sample size and placed in an envelope, and the envelope was sealed. The randomization envelope was opened in the operating theatre, patient picked from an envelope and hand over the sheet of paper to anesthesiologist.

Intraoperatively, antibiotics Metronidazole 7.5mg/kg and Cefuroxime 100mg/kg were administered at induction of anaesthesia. Anaesthesia induction was standardized across all patient. Patient was positioned supine. Skin preparation was done by applying 3 coats of 10% povidone iodine to the skin, there after patient was draped.

Laparotomy was performed via midline incision. Simple closure of perforation, wedge excision, segmental resection and anastomosis or ileostomy were done depending on the intraoperative findings. Peritoneal lavage was done with warm normal saline. Mass (One layer) closure of abdominal wound was done using nylon 1. Skin was closed with nylon 3/0 interrupted vertical mattress. Five percent povidone iodine solution was applied on the surface of the surgical wound. Surgical wound was covered with conventional gauze bandages.

At the end of the operation, patients were transported from the operating room to recovery room. Patients in study group received 80% oxygen via a high-flow, non-rebreathing, humidified, aerosol delivery system which incorporated a selector to provide a stable FIO_2 to the face mask, those in control group received 30% oxygen via a Venturi Mask. The assigned FIO_2 was maintained for 2 hours. The surgical team treating the patient were blinded to the FiO_2 assignment. Relevant perioperative clinical data were recorded, including duration of surgery and type of procedure performed.

Postoperative management was standardized for all the patients, intravenous antibiotic was continued till 5th postoperative day, thereafter was converted to oral. Wound was inspected on 3rd post-operative day, then daily thereafter till discharge. All patients were re-evaluated in the paediatric surgical outpatient clinic 7 days, 2 weeks, and 1 month after discharge from the hospital by a surgeon. Readmission was not included in the length of hospital stay calculation unless it occurs within 24 hours of discharge.

ETHICAL CONSIDERATION

Written consent was obtained from the parents or care givers of all children included in the study. Ethical approval was obtained from the Ethics and Research committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto (UDUTH/HREC/2016/471). Information obtained from the patients was treated confidentially.

DATA COLLECTION

A standardized pro forma was filled-in for each patient, this contained relevant perioperative patients information. Infection risk was evaluated using the National Nosocomial Infections Surveillance System (NNISS) scale. SpO_2 and FiO_2 were monitored while the patient was in the recovery room. SSI was diagnosed using Centers for Disease Control and Prevention criteria. Only those infections diagnosed during the first 30 postoperative days were included. Wound healing characteristics was evaluated using the ASEPSIS score. Daily score greater than 20 was considered positive for wound infection.

DATA ANALYSIS

Data obtained was analyzed using Statistical Package for Social Sciences (SPSS) version 20.0(SPSS Inc. Chicago, IL, USA). Qualitative variables were summarized using percentages and compared using Chi-squared test. Quantitative variables were summarized using mean ($\pm$ standard deviation) and compared using student t-test. Results were expressed using tables and figures where applicable.

The confidence level was set at 95% and level of significance at $P \leq 0.05$.

RESULTS

SOCIO-DEMOGRAPHIC CHRACTERISTICS

Forty-two (42) patients met inclusion criteria and were enrolled into the study. Their age ranged between 4 years and 15 years, mean age was 9.8±3.4 years (Table 1).

MODE OF PRESENTATION

The two groups were comparable in their mode of presentation. Nine (42.9%) of patients in control group were in ASA 2 compared to 8 (38.1%) of patients in study group, 11(52.3%) of patients in control group were in ASA 3 as compared to 12(57.1%) of patients in study group, only 2 (9.6%) of patient were in ASA 4 (1(4.8%) patient in each group), p=0.950. Other presentations were summarized in table 2.

PREOPERATIVE INVESTIGATIONS

Table 3 shows preoperative investigations. Mean haematocrit concentration was 28±3.2 % (mean ±SD) in control group and 27.5 ±5.2 % in study group, p=0.733. Twenty-Seven (64.3%) patients had haematocrit <30% (13(31%) patients in control group compared with 14 (3patients in study group). Only 18 (42.9%) patients 9(21.4%) patients in control group compared to 9(21.45%) in study group) had preoperative blood transfusion, p≥0.999. Only serum Bicarbonate and creatinine differed between the two groups. Mean serum bicarbonate was 22.2 ± 3.4mmol/l in control group compared to 24.6±2.1mmol/l in study group, p =0.006. Mean serum creatinine was 1.1±0.7 mg/dl in control group compared to 0.8±0.3 mg/dl in study group, (p=0.027).

INTRAOPERATIVE CHARACTERISTICS

The two groups were comparable in intraoperative characteristic (Table 4).

OPERATIVE PROCEDURE

Simple closure of perforation was done in 8(38.1%) control group and 10(47.6%) study group, 10(47.6%) patients in control group had resection and anastomosis compared with 11(52.4%) in study group, and Ileostomy was done for 3(14.3%) patients in control as compared to none in study group, p=0.195, as in figure 1.

POSTOPERATIVE COMPLICATIONS

Overall nineteen patients (45.2%) were diagnosed with SSI, Eleven patients (52.4%) had SSI in control group compared to 8(38.1%) in study group, p= 0.352. Postoperative complications were comparable between the two groups (table 5).

DISCUSSION

Typhoid perforation is associated with significant SSI with an infection rate as high as 53% in Nigeria (Ameh 1999), 68% in India (Deepak et al 2014) and Pakistan (Abdul-Ghaffar et al 2009). SSI following laparotomy for TIP causes significant morbidity, increases length of hospital stay, cost of care etc., and efforts made to reduce its incidence included delayed primary wound closure and avoiding use of drain (Usang et al 2009; Nasir et al 2012).

The overall SSI rate in this study was 45.2%, and this is lower than what was reported by Lukong et al previously from the same centre (Lukong et al 2011). It is also slightly lower than what was reported in other part of Nigeria(Ameh 1999;Usang et al 2009). This could be result of change in antibiotics policy , increase awareness as well as improvement in some preventive measures.

In this randomized control trial of administering 30% oxygen vs 80% supplemental oxygen for two hours in postoperative period, we found that administering 80% oxygen does not significantly reduce the incidence of SSI following laparotomy for typhoid intestinal perforation, p= 0.352. This finding was similar to what was reported by Pryor et al and Meyhoff et al (Pryor et al 2004; Meyhoff et al 2009**).** These studies were not able to demonstrate the benefit of supplemental oxygen on SSI in their patient instead Pryor found opposite effect.

Previous studies have demonstrated the benefit of supplemental oxygen (80%) on SSI (Greif et al 2000;Belda et al 2005; Bickel et al 2011). The patients in our study differed in some aspect with the patients in these studies, Patients with TIP have some inherent risk factors for SSI such as class IV surgical wound, malnutrition, perioperative blood transfusion as well as high NNIS score. In this study all patients had class IV wound while most the patients in Greif, Belda, Bickel as well as Meyhoff studies had class ii surgical wound, Pryor did not specify the class of wound in his patients. Belda and Meyhoff excluded patients with malnutrition, in this study patients with malnutrition cannot be excluded because most patient with TIP have low serum protein as shown in this study with mean serum protein of 5.5 g/dl and 5.8 g/dl in both control and study group respectively.

Most patients in previous studies were in ASA II category and most of the surgeries were elective with only small percentage of Pryor’s patients being emergencies. In this study all the patients were operated as emergency and 32 (71.2%) of our patients were in ASA

III category and this was the reason why most of the patients in this study had NNIS score of 3 unlike that of previous studies with most of their patients with NNIS score of 1.

Duration of hospital stay (14.4 ±6.10 days in control group and 13.3±6.10 days in study group) is lower than what was reported from previous studies (Ameh 1999; Eenze et al 2008;Usang et al 2009).

Our findings further corroborate a meta-analysis (Brar et al 2001**)** on effect of supplemental oxygen on SSI which demonstrated that supplemental oxygen had no effect on SSI. Brar also found out that supplemental oxygen reduces mortality; this finding was not supported by our study. This may be due to small sample size. The low mortality rate observed in this study may be due to the fact that all the critical patients who could not maintain adequate oxygen saturation were excluded.

In addition to these various interventions aimed at reducing the risk of SSI in typhoid perforation in children, long term solution may lie in improvement of sanitation, provision of safe drinking water, health education and mass Immunization (Ekenze et al 2008).

CONCLUSION

Administration of 80% supplemental oxygen compared with 30% oxygen for 2 hours postoperatively in children with typhoid intestinal perforation had no effect on surgical site infection. Frequencies of other postoperative complications and mortality were also not significantly different.

LIMITATIONS OF THE STUDY

1. The study was a hospital based; did not include all the children with TIP (exclusion criteria), therefore it may not show the true value of incidence.
2. Complete blinding was not possible because some of the patients were monitored by surgical team at the recovery room

RECOMMENDATIONS

1. Use of supplemental oxygen post-operatively for paediatric patients with TIP is safe, however, did not statistically significantly reduces the incidence of SSI; as such its administration should not be routine for now.

2. The validity of this study can be improved by recruiting larger number of patients with TIP. This could be possible in a multicenter study across the different regions of the country as sample size will be larger thus, validating the conclusion of the study.

The author declares no conflict of interest in this study.

REFERENCES

1. Abantanga FA, Wiafe-Addai B(1998). Postoperative complications after surgery for typhoid perforation in children in Ghana. Pediatr Surg Int. 14:55–58.
2. Abdul-Ghaffar A et al (2009). Management of typhoid ileal perforation: A surgical experience of 44 cases.Gomal J of medical sciences. 7: 27-30.
3. Ameh EA (1999). Typhoid ileal perforation in children: a scourge in developing countries. Ann Trop Paediatr. 19:267–272.
4. Babior BM, Lambeth JD, Nauseef W (2002). The neutrophil NADPH oxidase. Arch Biochem Biophys. 397:342-344.
5. Belda FJ, Aguilera L, García de la Asunción J, et al (2005). Supplemental perioperative oxygen and the risk of surgical wound infection: a randomized controlled trial. JAMA. 294:2035-42.
6. Bickel A, Gurevits M, Vamos R, Ivry S, Eitan A (2011). Perioperative hyperoxygenation and wound site infection following surgery for acute appendicitis: a randomized, prospective, controlled trial. Arch Surg. 146:464-70.
7. Brar MS, Brar SS Dixon E (2001). Perioperative Supplemental Oxygen in Colorectal Patients: A Meta-Analysis. Journal of Surgical Research. 166: 227–235.
8. Bratzler DW (2012). Strategies for the prevention of surgical site infections: Review of New Multi- specialty Society Guidelines. University of Oklahoma Health Sciences Center.
9. Deepak S, Jain AT, Gharde P, Sharma DB, Verma R (2014). Typhoid intestinal perforation in Central India – A surgical experience of 155 cases in resource limited setting. IJBAR. 5: 600-604
10. Ekenze SO, Ikefuna AN(2008). Typhoid perforation under 5 years of age. Ann Trop Paediatr. 28:53–58.
11. Greif R, Akca O, Horn EP, Kurz A, Sessler DI(2000). Supplemental perioperative oxygen reduces the incidence of surgical-wound infection. N Engl J Med. 342: 161-167.
12. Hospital Compare(2013). http://www.medicare.gov/hospitalcompare/. Accessed on April 25.
13. Lukong CS, Jabo BA, Sahabi SM(2011). Typhoid intestinal perforations in children in Sokoto, Northwestern Nigeria. Abstracts paper presented during the 9th scientific and annual General conference of APSON, Ilorin 2010. Afr J Paediatr Surg.8:121-37.

14. Meyhoff CS, Wetterslev J, Jorgensen LN, et al(2009). Effect of high perioperative oxygen fraction on surgical site infection and pulmonary complications after abdominal surgery: the PROXI randomized clinical trial. JAMA.302:1543-50.
15. Nasir AA, Abdurrahman LO, Adeniran JO(2012). Is intraabdominal drainage necessary after laparotomy for typhoid intestinal perforation? J Pediatr Surg. 47: 355-358.
16. Pryor KO, Fahey TJ 3rd, Lien CA, Goldstein PA(2004). Surgical site infection and the routine use of perioperative hyperoxia in a general surgical population: a randomized controlled trial. JAMA. 291:79-87.
17. Rayyan R et al.(2025). Reactive oxygen species in wound healing, balancing damage and repair: a literature review. Int J Health Sci Res. 15(8):255-263.
18. Scott RD(2013). The direct medical costs of healthcare-associated infections in U.S. Hospitals and the Benefits of Prevention. Division of Healthcare Quality Promotion National Center for Preparedness, Detection, and Control of Infectious Diseases Coordinating Center for Infectious Diseases Centers for Disease Control and Prevention March, 2009. Available at: http://www.cdc.gov./hai/pdfs/hai/scott_costpapaer.pdf. Accessed April 26,
19. Usang UE et al (2009). Primary closure of abdominal wounds following typhoid perforation. African J Pediatr Surg. 6:31-34.
20. Vinkel, J, Arenkiel B, Hyldegaard O (2023). The Mechanisms of Action of Hyperbaric Oxygen in Restoring Host Homeostasis during Sepsis. *Biomolecules*, *13*(8), 1228.

TABLES AND FIGURES

Table 1: Socio-demographic characteristics of the patients

characteristics	**30% oxygen (n = 21)**	**80% oxygen (n = 21)**	**P-value**
Age, mean (SD), years	10 ±3.0	9.7 ±3.7	0.752
Sex:			0.495
Male, frequency (%)	14 (66.7)	16 (76.2)	
Female, frequency (%)	7 (33.3)	5 (23.8)	

(SD) = Standard deviation

Table 2: Mode of presentation of the patients

Characteristics	**30% oxygen (n=21)**	**80% oxygen (n=21)**	**P-value**
Weight (mean ± SD) kg	24.7± 6.9	23.5± 7.8	0.595
Temperature (mean ± SD)ºC	38.4± 0.9	40.8± 11.3	0.346
Respiratory rate (mean ± SD) breath/min	37.7± 9.0	36.9 ±9.0	0.759
Heart rate (mean ± SD)beat/min	114± 15	117± 17	0.534
Oxygen saturation (mean ± SD) %	95.4±1.2	95.8± 1.7	0.463

(SD) = Standard deviation

Table 3: Preoperative investigations of the patients

Investigations	30% oxygen (n=21)	80% oxygen (n=21)	P-value
Haematocrit (mean ±SD) %	28 ±3.2	27.5± 5.2	0.733
Serum protein (mean ±SD) g/dl	5.5 ±(0.7	5.8± 0.7	0.120
Serum albumin (mean ±SD) g/dl	2.9 ±0.6	3.2±0.6	0.189
WBC count (mean ±SD) +	8.9± 2.3	9.4 ±3.2	0.603
Serum sodium (mean ±SD) #	132.7± 6.2	135± 4.9	0.183
Serum potassium (mean ±SD) #	3.9 ±0.6	4.0± 0.8	0.502
Serum chloride (mean ±SD) #	96.1± 5.8	95.7± 4.9	0.836
Serum bicarbonate(mean ±SD) #	22.2± 3.4	24.6± 2.1	**0.006**
Serum urea (mean ±SD) #	6.2 ±4.7	4.9± 2.1	0.238
Serum creatinine (mean ±SD) $	1.1± 0.7	0.8± 0.3	**0.027**
RBS (mean ±SD) #	6.1± 1.3	6.1± 0.8	0.894
Widal test, frequency (%):			0.323
Significant titer	20 (95.5)	20 (95.5)	
No significant titer	0 (0)	0 (0)	
Missing	1 (4.5)	1 (4.5)	

SD= Standard deviation, RBS= Random Blood Sugar, g/dl = gram per deciliter, mg/dl = milligram per deciliter.

(+) = value in x10 ^{9}/L,

(#) = Concentration in mmol/L

($) = Concentration in mg/dl

Table 4: Intraoperative parameters of the patients

Parameters	**30% oxygen (n=21)**	**80% oxygen (n=21)**	**P-value**
Duration of admission as at the time of surgery (mean± SD) Hours	49.5± 23.1	53.7± 28.4	0.607
Volume of peritoneal collection, mean± SD) ml	633.3± 501	709.5± 616.6	0.663
Number of perforation, frequency (%) : Single	13 (61.9)	14 (66.7)	0.747
Multiple	8 (38.1)	7 (33.3)	
Intraoperative blood transfusion, frequency (%): Yes	18 (85.7)	16 (76.2)	0.432
No	3 (14.3)	5 (23.8)	
Duration of surgery (mean± SD) minutes	109.4± 25.9	105.5± 25.4	0.624
96.2± 1.2	96.2± 1.2	96.2± 1.5	0.910

SD= Standard deviation

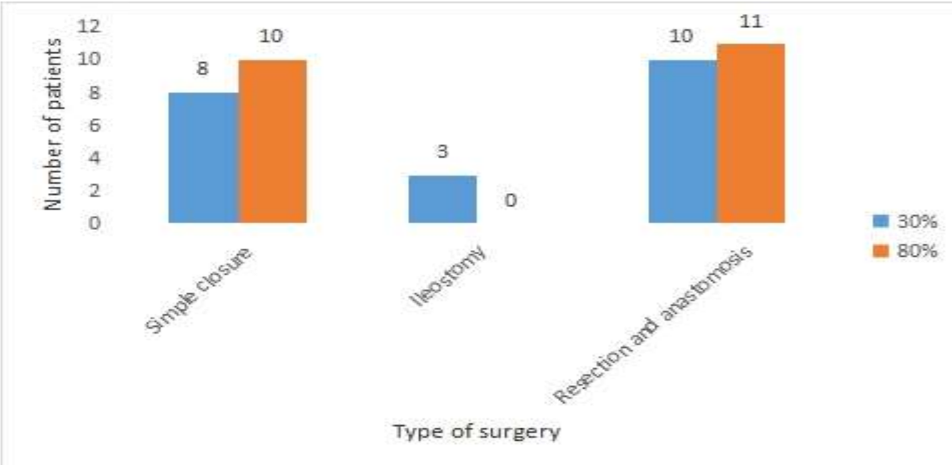

Figure 1: Type of surgery offered to the patients with typhoid intestinal perforation in both study group, p=0.195.

Table 5: Post-operative complications

Outcome	**30% oxygen (n=21)**	**80% oxygen (n=21)**	P- value
Surgical site infection, frequency (%)	11 (52.4)	8 (38.1)	0.352
Wound swab M/C/S, frequency (%) Positive culture	4 (36.4)	1 (12.5)	0.245
Negative culture	7 (63.6)	7 (87.5)	
Location of infection, frequency (%): Superficial SSI	4 (36.4)	5 (62.5)	0.260
Deep SSI	7 (63.6)	3 (37.5)	
Organ space SSI	0 (0)	0 (0)	

Number of postoperative day SSI Diagnosed (mean± SD) days	4.5± 1.4	5± 1.5	0.423
Wound dehiscence : Partial, frequency (%)	8(38.1)	3(14.3%)	0.128
Complete, frequency (%)	1(4.8)	0(0)	
Faecal fistula, frequency (%)	3(14.3)	2(9.5)	0.675
Prolonged ileus, frequency (%)	2 (9.5)	3 (14.3)	0.633
Pneumonia, frequency (%)	3 (15)	0 (0)	0.072

Table 5: Post-operative complications (continued).

Parameters	**30% oxygen** **(n=21)**	**80% oxygen** **(n=21)**	**P-value**
NNIS Score, frequency (%): 1	1 (4.8)	2 (9.5)	0282
2	11 (52.4)	6 (28.6)	
3	9 (42.8)	13 (61.9)	
ASEPSIS wound score (mean± SD)	14.5± 10.8	9.8± 7.5	0.108
Time of commencement of oral feed (mean± SD) hours	56.2 ±21.1	57.8 ±21.2	0.809
Time of Stitches removal (mean ±SD) days	11.2± 2.1	11.3± 2.0	0.817
Hospital stay(mean ±SD) days	14.4 ±6.10	13.3 ±6.1	0.580
Death, frequency (%)	1 (4.8)	1 (4.8)	0.972

SD= Standard deviation, SSI = Surgical Site Infection, M/C/S = Microscopy, Culture and Sensitivity, NNIS = National Nosocomial Infection surveillance.