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Research Article

**EARLY ENTERAL FEEDING VERSUS “NIL BY MOUTH”  
AFTER GASTROINTESTINAL SURGERY: SYSTEMATIC  
REVIEW AND META-ANALYSIS OF CONTROLLED TRIALS**<sup>1</sup>Dr. Abhar Zaman, <sup>2</sup>Dr Sabiha Arshad, <sup>3</sup>Dr Amna Shaheen<sup>1</sup>WMO, THQ hospital, Sabzazar Lahore, Pakistan.<sup>2</sup>CMO, Medical Squadron, Pakistan Aeronautical Complex, Kamra Cantt.<sup>3</sup>WMO, BHU 227/9R, Fort Abbas, Bahawalnagar.**Abstract:**

**Objective:** After the gastrointestinal surgery, there comes a period of starvation in which intake of the food is not allowed through the mouth. This process is called nil by mouth. During this period, a catheter is inserted into the stomach.

**Methods:** Through this tube, the food and intravenous fluids are provided. In this way, the food intake through the mouth is totally prevented. This is done to prevent the issues of nausea and vomiting after the gastrointestinal surgery.

**Results:** So, the internal lining and epithelium of the gastrointestinal tract can be protected and the process of the healing could have proceeded (Ahmad 2013).

**Key words:** Gastrointestinal surgery, nil by mouth, nasojajenal tube

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**INTRODUCTION:**

According to the different studies and researches it has been found out that starting the early after the gastrointestinal surgery can be proved beneficial. After the gastrointestinal surgery, the chance of development of Postoperative dysmotility is too high. If the feeding through the mouth is continued in this time duration than it can affect the healing process of the stomach, colon and other parts of the gastrointestinal tract. After the gastrointestinal surgery, it takes about 4-8 hours for the complete recovery and returning back to the normal functioning. After the surgery the feeding after the 24 hours is favorable for the body and food is observed by the body easily. The selection of the gastrointestinal surgery is done for those patients who suffer from the malnourishment (Moss 2015). In the severe cases, it is called increased morbidity. While the process of the healing and starvation is totally opposite in case of the animals. If any animals suffer from the starvation than the level of the collagen in the scar tissues of the body and after the gastrointestinal surgery it reduces the pace of process of healing. Moreover, the quality of the healing is also reduced. While if the animal is provided with the food through the mouth after the gastrointestinal surgery, it enhances the process of their healing and more amount of the collagen is deposited and enhances its strength. The experiment done on both animals and humans proves that the enteral nutrition is essential for the processing of the healing while the process of the early feeding reduces the healing process of the gastrointestinal tract (D.McCarterM.D 1997).

**METHOD:*****Pattern of selection of patients***

To conduct the research, such patients were selected for the analysis that has once undergone through the gastrointestinal surgery. Among the selected patients some of the patients have been selected for the enteral feeding within the 24 hours of the surgery while in the other group the patients were passed through the process of food intake by nil by mouth. In this group, the patients were given food through

the mouth after 24 hours of the surgery. The selection of the patients was done on the random basis. To check out the relevant list of the patients, the computerized data is considered from the PubMed. Along with this, the trialists are also demanded to provide the information about the results about which was not provided already (Lennard-Jones 1992). Along with this, the pharmaceutical companies are also demanded to provide the additional data and information that has not been published yet.

***Data collection and results***

For the initial research data was collected for every case, does not matter the case was for the crossed channels or was for any kind of tumor either benign or malignant, the type of food given to the patient and the way of delivery of the food to the patient. The different parts of the body that were passed through the surgery were selected for research. These parts were lower gastrointestinal parts like duodenum, upper gastrointestinal parts like jejunum, pancreas, spleen etc. The outcomes of the patients were noted suffering from different kind of the infections and disorders like crossed channeled intestines, nausea, and vomiting, pneumonia, long hospital stay etc. To make the research more authentic and valid, the catheter was inserted into the body without any plan and the results were notes from that (Verdery 1992).

***Analysis***

From the individuals, the data was collected and combined. The data that was collected for the long hospital stay was dealt with the mean differences on the non-standardize basis. To check the validity of the relative risk,  $X^2$  test was used. The results of the whole research were presented as the relative risks.

**RESULTS:**

To obtain the valid result of the research, totally 14 controlled groups were selected and experiments were done on them. Out of these 14, three groups were canceled because no valid and authentic result was obtained as the result of this group. So the research conducted on them was excluded (H 2008).

The patients selected for the research were suffering from different kind of the gastrointestinal problems. In the first table, the results concluded from the 11 tests are given. This table is given as follow:

**Table 1**

Characteristics of eleven trials of early enteral feeding after elective gastrointestinal surgery

	No of patients		Type of feed	Route of feeding	Pathology (%)		Site of surgery (%)		
	Active	Control			Malignant	Benign	Upper	Lower	Hepatobiliary
Schroeder et al, 1991 <sup>13</sup>	16	16	Standard	NJ	NR	NR	0	100	0
Sagar et al, 1979 <sup>20</sup>	15	15	Elemental	NJ	NR	NR	27	73	0
Binderow et al, 1994 <sup>21</sup>	32	32	Oral	Oral	NR	NR	0	100	0
Reissman et al, 1995 <sup>22</sup>	80	81	Oral	Oral	NR	NR	0	100	0
Carr et al, 1996 <sup>23</sup>	14	14	Standard	NJ	NR	NR	NR	NR	NR
Beier-Holgerson et al, 1996 <sup>24</sup>	30	30	Standard	ND	65	35	13	87	0
Ortiz et al, 1996 <sup>25</sup>	95	95	Oral	Oral	87	23	0	100	0
Heslin et al, 1997 <sup>26</sup>	97	98	Immune enhancing	J	93	7	51	0	49
Hartzell et al, 1997 <sup>27</sup>	29	29	Standard	Oral	64	28	0	100	0
Watters et al, 1997 <sup>28</sup>	15	16	Standard	J	93	7	96	0	4
Stewart et al, 1998 <sup>29</sup>	40	40	Oral	Oral	NR	NR	0	100	0

NJ=nasojunal tube, ND=nasoduodenal tube, J=jejunostomy, NR=not reported.

For nausea, dehiscence and mortality, the research was completed in 11 trials (RH 2015). The result of the research is given in the following table:

**TABLE 2**

Relative risk (95% CI) of anastomotic dehiscence, infection, and death in eleven randomised trials of early enteral nutrition

	Anastomotic dehiscence		Infections				Vomiting	Death
			Any infection	Wound infection	Pneumonia	Intra-abdominal abscess		
Sagar et al <sup>20</sup>	0.33 (0.01 to 7.58)	0.71 (0.29 to 1.75)	0.60 (0.17 to 2.07)	NR		1.00 (0.16 to 6.20)	NR	NR
Schroeder et al <sup>13</sup>	NR	3.00 (0.13 to 68.6)	NR	3.00 (0.13 to 68.6)		NR	NR	NR
Binderow et al <sup>21</sup>	NR	NR	NR	NR		NR	1.75 (0.85 to 3.56)	NR
Reissman et al <sup>22</sup>	0.34 (0.01 to 8.16)	1.27 (0.35 to 4.54)	2.02 (0.19 to 21.9)	0.34 (0.01 to 8.16)		1.01 (0.06 to 15.9)	1.56 (0.78 to 3.13)	NR
Carr et al <sup>23</sup>	NR	0.14 (0.01 to 2.53)	NR	NR		NR	NR	0.33 (0.01 to 7.54)
Beier-Holgersen et al <sup>24</sup>	0.50 (0.10 to 2.53)	0.14 (0.04 to 0.57)	0.10 (0.01 to 0.73)	0.5 (0.05 to 5.22)		0.20 (0.01 to 4.00)	0.88 (0.55 to 1.42)	0.50 (0.01 to 2.53)
Ortiz et al <sup>25</sup>	0.50 (0.09 to 2.67)	0.80 (0.33 to 1.94)	0.83 (0.26 to 2.64)	1.00 (0.14 to 6.95)		1.00 (0.06 to 15.8)	NR	NR
Heslin et al <sup>26</sup>	0.76 (0.17 to 3.30)	0.95 (0.62 to 1.44)	1.64 (0.71 to 3.78)	0.43 (0.12 to 1.63)		2.02 (0.19 to 21.9)	1.38 (0.86 to 2.21)	0.67 (0.12 to 3.94)
Hartsell et al <sup>27</sup>	0.33 (0.01 to 7.86)	3.00 (0.13 to 70.7)	NR	3.00 (0.13 to 70.7)		NR	1.40 (0.75 to 2.62)	0.33 (0.01 to 7.86)
Watters et al <sup>28</sup>	0.27 (0.03 to 2.12)	NR	NR	NR		NR	NR	NR
Stewart et al <sup>29</sup>	3.00 (0.16 to 71.5)	0.56 (0.20 to 1.51)	0.11 (0.01 to 2.00)	1.00 (0.06 to 15.4)		NR	1.00 (0.55 to 1.82)	0.33 (0.01 to 7.95)
Combined relative risk	0.53 (0.26 to 1.08)	0.72 (0.54 to 0.98)	0.71 (0.44 to 1.17)	0.73 (0.33 to 1.59)		0.87 (0.31 to 2.42)	1.27 (1.01 to 1.61)	0.48 (0.18 to 1.29)
P value from test for heterogeneity	0.96	0.22	0.074	0.85		0.84	0.52	0.99

NR=not reported or no events occurred.

After these trails, the probabilities of different events like percentage of dehiscence in early feeding groups and in the control groups are determined (Ward 1982 ). The result of this group is given as follow:

**Table 3**

Number of patients with complications reported in eleven randomised trials of early enteral nutrition

	No of patients (active/ control)	Anastomotic dehiscence				Infections						Vomiting		Death	
				Any infection		Wound infection		Pneumonia		Intra-abdominal abscess					
		Active	Control	Active	Control	Active	Control	Active	Control	Active	Control	Active	Control	Active	Control
Sagar <i>et al</i> <sup>20</sup>	15/15	0	1	NR	NR	3	5	NR	NR	2	2	NR	NR	0	0
Schroeder <i>et al</i> <sup>13</sup>	16/16	0	0	1	0	0	0	1	0	0	0	NR	NR	0	0
Binderow <i>et al</i> <sup>21</sup>	32/32	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	14	8	NR	NR
Reissman <i>et al</i> <sup>22</sup>	80/81	0	1	5	4	2	1	0	1	1	1	17	11	0	0
Carr <i>et al</i> <sup>23</sup>	14/14	NR	NR	0	3	NR	NR	0	0	0	0	NR	NR	0	1
Beier-Holgersen <i>et al</i> <sup>24</sup>	30/30	2	4	2	14	1	10	1	2	0	2	15	17	2	4
Ortiz <i>et al</i> <sup>25</sup>	95/95	2	4	8	10	5	6	2	2	1	1	NR	NR	0	0
Heslin <i>et al</i> <sup>26</sup>	97/98	3	4	29	31	13	8	3	7	2	1	30	22	2	3
Hartsell <i>et al</i> <sup>27</sup>	29/29	0	1	1	0	0	0	1	0	0	0	14	10	0	1
Watters <i>et al</i> <sup>28</sup>	15/16	1	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Stewart <i>et al</i> <sup>29</sup>	40/40	1	0	5	9	0	4	1	1	0	0	14	14	0	1

NR=not reported.

**DISCUSSION:**

After conducting the meta-analysis, there come three outputs. These outputs are given as follow:

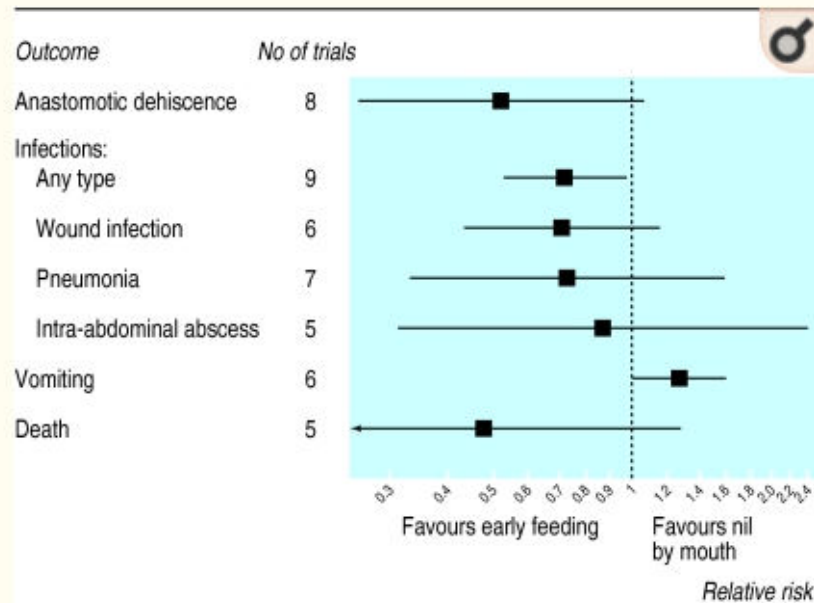
After the research, it has been concluded that there is not an advantage for providing the patient with food with catheter directly into the stomach that is nil by mouth after gastrointestinal surgery (Bajwa 2017).

In gastrointestinal surgery, nil by mouth proves to be advantageous for less number of patients.

There is an urgent need to provide the patients with the enteral feeding that has passed through the elective gastrointestinal surgery.

**CONCLUSION:**

In the research either the data was not enough but it has been concluded that in case of the elective gastrointestinal surgeries, the nil by mouth proves to be beneficial for the patients. This can be shown in the following figure:

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