REDUCTION OF POST OPERATIVE PAIN AFTER LAPAROSCOPY USING A SIMPLE POLYTHELENE DRAIN

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SUMMARY

A simple polythelene drain was left for 6 hours in the peritoneal cavity through the umbilical incision following laparoscopy. Visceral peristaltic and voluntary muscle activity helped to expel residual gas thus reducing post operative pain. In this randomized study 25 patients were compared in each group i.e. with "Gas Drain" and "No Gas Drain".

Pain was significantly reduced in the lower abdomen and at the umbilicus in the "Gas Drain" group during the post operative days and after mobilization at home.

Introduction

Nitrous oxide which is introduced into the abdominal cavity during a laparoscopy is never completely removed after the operation. This residual gas causes pain during the post operative period particularly when the patient recommences activity and ambulation. (Dobbs et al 1987). The pain is thought to be due to peritoneal irritation and to the creation of space between liver and diaphragm leading to loss of suction support of the heavy liver. Release of gas at the end of the operation is very inefficient by whatever method tried (Chamberlain 1984), and there is no significant benefit from keeping the patient tilted head down for half an hour to discourse the cellection of gas above the liver as tried by Dobbs et al (1987). Leaving a catheter into the peritoneal cavity via the umbilical incision would allow the gas to escape from the peritoneal cavity in the next few hours aided by the patients own peristaltic and voluntary muscle activity.

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Methodology

The population under study were women who were undergoing routine laparoscopy for either infertility or Falope ring sterilisation. Laparoscopy was performed in all cases under general anaesthesia with muscle relaxation and positive pressure ventilation via an endotracheal tube. The abdomen was distended with Nitrous oxide, initially with 2′ to 3

litres and about 1 to 2 litres more during the laparoscopy. After the operation as much gas as possible was expelled from the abdomen through the open umbilical canula by pressing on the abdominal wall. Patients were randomly assigned to treatment or not as follows. One group of patients had a polythelene catheter gauge 16 inserted into the abdomen via the umbilical canula before removing it. The umbilical incision was sutured with a single suture of plain catgut. A safety pin was inserted through the catheter which was in turn taped to the abdominal wall, leaving about half the catheter in the abdomen. (Total length of the catheter was 50 cm). The catheter was retained for 6 hours post operatively. In the other group a catheter was not inserted. All patients were laid horizontally either on their backs or sides. All operations were performed by the same surgical team.

Results

There were 25 patients in each group. The two treatment groups did not differ significantly regarding age, procedure adopted and quantity of Nitrous oxide insufflated.

This is shown in Tables - I-III

TABLE - I
AGE IN YEARS

	Gas Drain	No Gas Drain	Difference
n	25	25	
Mean	24.7	25.8	1.1 ^{NS}
(SE)	(0.69)	(0.78)	

Test : t N S = Not Significant (p 0.05)

TABLE - II
PROCEDURE

Procedure	No. of Patients Gas Drain	No Gas Drain
Diag. Lap	19 (83%)	15 (71%)
Lap. Ster	3 (13%)	5 (24%)
Others	1 (4%)	1 (5%)
Total	23 (100%)	21 (100%)

The above difference is not significant. (p 0.50 from test)

TABLE - III
NITROUS OXIDE
ADMINISTERED IN LITRES

Period of Administration		Gas Drain	No Gas Drain	Difference
Initial	n	22	22	
	mean	2.09	2.14	0.05 ^{NS}
	(SE)	0.10	0.11	
During	n	22	22	
Operation	mean	0.59	0.66	0.07 ^{NS}
	(SE)	0.14	0.14	
Initial	n	22	22	
and	mean	2.68	2.8	0.12 ^{NS}
during	(SE)	0.12	0.10	
operation				

All patients completed a questionnaire regarding their symptoms at 2 hours, 6 hours after the operation, the next day before discharge from the hospital, i.e. 18 to 24 hours after the operation and finally 2 days later. (This questionnaire was completed with the help of the resident doctor).

At 2 hours the mean scores for pain

the lower abdomen, upper abdomen and at the umbilicus did not differ, significantly in the two groups. However in the case of "Gas Drain" group the reduction in the mean score of pain in the lower abdomen at Day 3 was significantly more than in the "No Gas Drain" group.

this difference was statistically not significant.

In both treatment groups the symptom severity reduced significant1 at 6 hours, Day1 & Day3 when measured from the 2 hour period scores. This was calculated by the Wilcoxon MPSR test.

TABLE - IV
PAIN THE LOWER ABDOMEN

	Values of Mean (SE) of scores						
	2 hrs.	6 hrs	Day1	Day3	Change from 2 hours		
					6 hrs	Day1	Day3
Gas Drain	1.92 0.06	1.56 0.12	0.68 0.10	0 0	-0.36 (0.11)	-1.24 (0.11)	-1.92 (0.06)
No Gas Drain	1.80 (0.06)	1.68 (0.11)	0.72 (0.12)	0.24 (0.11)	-0.12 (0.12)	-1.08 (0.13)	-1.56 (0.13)
Difference	0.12 NS				0.24 NS	0.16 NS	0.36 *

Similarly in the "Gas Drain" Group the reduction in the mean score of pain at umbilicus was significantly more than the "No Gas Drain" group at 6 hours and Day 3.

Discussion

The results show that the frequency and severity of the pain after laparoscopy can be significantly reduced by using a polythelene tube through the umbilicus

TABLE - V
PAIN AT THE UMBILICUS

	Values of Mean (SE)						
	2 hrs.	6 hrs	Day1	Day3	Change from 2 hours		
					6 hrs	Day1	Day3
Gas Drain	1.92 (0.06)	1.52 (0.10)	0.68 (0.10)	0 (0)	– 0.40** NS (0.10)	– 1.24** (0.12)	– 1.92** (.06)
No Gas Drain	1.68 (0.11)	1.60 (0.13)	0.76 (0.12)	0.28 (0.11)	– 0.08 NS (0.11)	– 0.92** (0.14)	– 1.40** (0.15)
Difference	0.24 NS				0.32*	0.32 NS	0.52**

The symptoms of nausea and vomitting, pain in the shoulder and chest were nearly absent in both treatment groups. However even when there was a difference of frequency of nausea and vomitting

for 6 hours post operatively to release residual gas from the abdomen.

Pain after laparoscopy can persist in many cases for more than 3 days and is most frequent and severe after the patient

returns home the next day. Mobilization increases the traction on peritoneal reflections by heavy viscera, which loose suction support for their weight due to creation of peritoneal spaces by gas. The marked benefit of a gas drain post operatively suggests that visceral peristalsis and voluntary muscle activity leads to expulsion of considerable volume of residual gas.

References

1. *Chamberlain G.: Brit. J. of Obstet. & Gynec. 91:367, 1984.*
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