USE OF A MARCAINE PUMP FOR THE CONTROL OF POST-OPERATIVE PAIN IN ABDOMINAL RECONSTRUCTION

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THE AESTHETIC CENTER FOR PLASTIC SURGERY

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PURPOSE

This study presents the results of 20 patients undergoing an abdominal wall reconstruction utilizing a pain relief system that provides continuous infusion of a non narcotic medication Marcaine (Bupivacaine) directly into the surgical site for reducing pain in the post-operative period.

MATERIALS AND METHODS

Ten patients had a Stryker Pain Pump 2 (Stryker Instruments, Kalamazoo, MI), which is a pain management device with the features of a PCA pump, yet is disposable and suitable for ambulatory use. This patient-controlled device provides continuous delivery of a non-narcotic cocktail via a thin, fenestrated catheter inserted in the abdominal wall or placed directly in top of the abdominal fascia. The pain relief system consists of a kinkless catheter (which helps prevent occlusion) and a balloon pump, which can be programmed to offer continuous infusion rates of 0.5,1, 2, 3, 4, 5, 6, 7, 8, 9, or 10ml per hour.

Bolus programming allows for 1, 2, 3, 4, or 5ml. Bolus lockout times are 10, 20, 30, 45 ,60, 90, or 120 minutes. Programming lockout eliminates any possibility of the patient manipulating the settings, and a digital display provides constant infusion status at a determined Marcaine concentration. It has a sensor which sounds in the event of an occlusion. The device is simple to program, completely enclosed and protected, and can be worn with a shoulder strap or in a fanny pack. Reservoirs of 250cc and 400cc are available for administration of large volumes.

Ten additional patients received standard oral and intramuscular post-operative medications for pain (e.g., Demerol, Percocet, Lortab) and were not provided with a PCA or pain pump. All of the patients were then asked to complete an evaluation of their post-operative pain and discomfort, the results of which are summarized in **Table 1** and **Table 2**.

TABLE 1: ABDOMINOPLASTY PATIENTS *WITH* POST-OP MARCAINE PUMP

AGE	PROCEDURE(S)	# OF PROCED.	PAIN MEDS & DRUG CLASS	# PILLS TAKEN	DAY NORMAL	RECOV. RANK
40	ABDPLASTY, LIPOx2, BAM	4	LORTAB (III)	24	2	7
43	ABDPLASTY, BUTTOCK LIFT, THIGH LIFT LIPOx3	7	LORTAB (III)	4	3	7
42	ABDPLASTY, LIPOx3, BREAST LIFT	5	LORTAB (III)/DEMEROL (II)	16/10	3	8
28	ABDPLASTY, LIPOx1, BAM	3	LORTAB (III)	15	1	10
36	ABDPLASTY, FACE, BROW & NECK LIFT, UP. & LOW. LIDS, FAT GRAFTS	7	PERCOCET (II)	14	2	5
27	ABDPLASTY, LIPOx5	6	PERCOCET (II)	5	4	10
33	ABDPLASTY, LIPOx9, BUTTOCK LIFT	11	LORTAB (II)	32	N/A	6
N/A	ABDPLASTY, LIPOx2, BROWLIFT, FAT GRAFT	5	LORTAB (II)	21	N/A	10
40	ABDPLASTY, LIPOx3, BAM	7	PERCOCET (II)	7	4	10
39	ABDPLASTY, LIPOx5, CHIN AUG.	7	DEMEROL (II)	20	1	5
32.8		**6.2**	**(DRUG CLASS): 2.5**	**16.8**	**2.5**	**7.8**

DATA AVERAGES ARE BOLD AND ARE HIGHLIGHTED IN YELLOW AT THE BOTTOM OF THE TABLE. RECOVERY RANKING BASED ON A 1–10 SCALE, WITH 1 BEING THE WORST RECOVERY, 5 BEING SATISFACTORY RECOVERY, AND 10 BEING THE BEST RECOVERY.

TABLE 2: ABDOMINOPLASTY PATIENTS *WITHOUT* POST-OP MARCAINE PUMP

AGE	PROCEDURE(S)	# OF PROCED.	PAIN MEDS & DRUG CLASS	# PILLS TAKEN	DAY NORMAL	RECOV. RANK
26	ABDPLASTY, LIPOx1, BAM	3	PERCOCET (II)	25	3	6
40	ABDPLASTY, LIPOx2	3	PERCOCET (II)	55	22	8
38	ABDPLASTY, LIPOx4	5	DEMEROL (II)	40	2	10
38	ABDPLASTY, LIPOx6, BAM	8	PERCOCET (II)	120	4	6
37	ABDPLASTY, LIPOx2, BREAST LIFT	5	PERCOCET (II)	24	8	5
41	ABDPLASTY, BAM	2	PERCOCET (II)	6	8	8
36	ABDPLASTY, LIPOx7	8	PERCOCET (II)	12	4	5
33	ABDPLASTY, LIPOx4, MASTOPEXY	6	PERCOCET (II)	25	4	9
46	ABDPLASTY, LIPOx5	6	PERCOCET (II)	50	4	5
33	ABDPLASTY, LIPOx1	2	PERCOCET (II)	18	3	8
36.8		**4.8**	**(DRUG CLASS): 2**	**37.5**	**6.2**	**7**

DATA AVERAGES ARE BOLD AND ARE HIGHLIGHTED IN YELLOW AT THE BOTTOM OF THE TABLE. RECOVERY RANKING BASED ON A 1–10 SCALE, WITH 1 BEING THE WORST RECOVERY, 5 BEING SATISFACTORY RECOVERY, AND 10 BEING THE BEST RECOVERY.

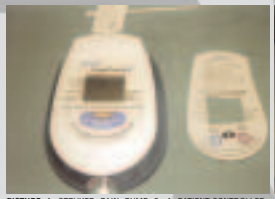
RESULTS

Our study reveals a significant reduction in post-operative pain and discomfort as a result of the use of the pain pump. Although the group with the pain pump was older (38.2 years versus 34.5), had more procedures (6.2 versus 4.8), and had weaker pain medicines (Classes II and III versus Class II), they still took far fewer post-operative narcotics (16.8 versus 37.5 pills), resumed normal activities sooner (Day 2.5 versus Day 7.5), and rated their recovery as better (7.8 versus 7.0) than the non-pump group.

The simplicity of installing and running the pump, the benefits realized by patients (i.e., early ambulation, less pain, reduced need, and the strength of post-operative pain medications) all make us feel very optimistic that patients appreciate the use of this device. Our experience indicates patients get out of bed sooner with this device, thereby reducing the incidence of deep venous thrombosis and/or pulmonary embolus.

CONCLUSION

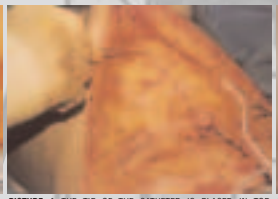
Although our initial results are very encouraging and suggest the use of a pain pump may justify the extra cost when performing abdominal wall reconstruction cases, we feel further research with more clinical cases is necessary in order to recommend the use of this device for pain management after an abdominoplasty.



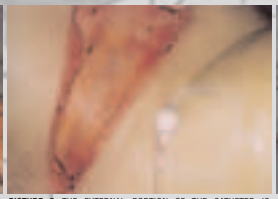
PICTURE 1: STRYKER PAIN PUMP 2, A PATIENT-CONTROLLED, AMBULATORY-DELIVERY, PAIN RELIEF INFUSION SYSTEM USED IN THIS STUDY

PICTURE 2: PAIN PUMP, STANDARD AND FENESTRATED CATHETERS, INTRODUCER NEEDLE, TUBING, AND SYRINGE READY TO BE APPLIED TO THE PATIENT

PICTURE 3: PLACEMENT OF FENESTRATED AND STANDARD INFUSION CATHETERS IN THE SURGICAL SITE



PICTURE 4: THE TIP OF THE CATHETER IS PLACED IN TOP OF THE FASCIA, OR IT CAN BE BURIED WITHIN ONE OF THE ABDOMINAL PLICATION SUTURES.



PICTURE 5: THE EXTERNAL PORTION OF THE CATHETER IS KEPT IN POSITION WITH THE USE OF A CONVENTIONAL DRESSING.

PICTURE 6: PAIN PUMP IS RUNNING (ACCORDING TO SURGEON'S SPECIFIC SETTINGS) AND READY TO WEAR IN A SHOULDER STRAP OR A PADDED CARRYING CASE.