6.2 Demographic Characteristics

Table 8 summarizes the demographic characteristics of all patients that were entered in the study. The study was composed of 107 adults (89.9%) and 12 pediatric (10.1%) SeraSeal treated patients, with an age range of 20 days to 92 years old and a mean of 52.12 years. The patients enrolled in the three surgical groups: cardiovascular, orthopedic and general surgery, no significant difference with gender (P=0.1096), significant difference in age between the 3 surgical groups (P=0.018), but no significant difference in age and gender in each surgical group (P=0.5842).

Table 8 Demographic Characteristics

	Treatment Group			
Demographic Characteristic	**Adult (n=107)**		**Pediatric (n=12)**	
Sex	**M**	**F**	**M**	**F**
	56 (52.3%)	51 (47.7%)	6 (50.0%)	6 (50.0%)
Age (yrs)				
0-2	-	-	2 (16.7%)	3 (25.0%)
2-10	-	-	3 (25.0%)	0 (0.0%)
11-17	-	-	1 (8.3%)	3 (25.0%)
18-20	3 (2.8%)	1 (0.9%)	-	-
21-30	3 (2.8%)	3 (2.8%)	-	-
31-40	9 (8.4%)	9 (8.2%)	-	-
41-50	8 (7.5%)	3 (2.8%)	-	-
51-60	12 (11.2%)	5 (4.6%)	-	-
61-70	8 (7.5%)	12 (11.0%)	-	-
71-80	5 (4.7%)	15 (13.8%)	-	-
81-90	7 (6.5%)	2 (1.8%)	-	-
91-92	1 (0.9%)	1 (0.9%)	-	-
Weight (lb)	(n=56)	(n=51)	(n=6)	(n=6)
mean ± SD	157.25 ± 20.73	138.20 ± 15.66	52.00 ± 34.76	72.00 ± 38.72
Range	110-202	112-172	4-99	15-110
Height (in)	(n=56)	(n=51)	(n=6)	(n=6)
mean ± SD	66.7 ± 2.47	62.35 ± 2.25	42.71 ± 13.30	47.00 ± 16.93
Range	67.71	58-67	16-54	23-63
Vital Signs	**Blood Pressure**		**Pulse Rate**	
Normal				
Male	42 (51.2%)		46 (52.3%)	
Female	40 (48.8%)		42 (47.7%)	
Abnormal				
Male	14 (56.0%)		10 (52.6%)	
Female	11 (44.0%)		9 (47.4%)	

Laboratory	Blood Level	Clotting Time
Normal		
Male	51 (57.3%)	40 (74.1%)
Female	38 (42.7%)	14 (25.9%)
Abnormal		
Male	5 (27.8%)	16 (30.2%)
Female	13 (72.2%)	37 (69.8%)

Ref: Demographic Data, section 12.2.3, page 100.

7. Efficacy Evaluation

7.1 Data Sets Analyzed

71.1 Number and Distribution of Patients

A total of 238 patients participated in this study at 5 centers. All of the centers were in Lima, Peru. There were no withdrawl of patients. The number of patients from each study center and by treatment group is shown in Table 9.

Table 9 Number in Each Enrolled (E) Group and Who Completed (C) Surgical Treatment at Each Center

		Treatment Group			
		SeraSeal		Cauterization	
Center No.	Site	E	C*	E	C
1	Edgardo Rebagliati Martins National Hospital	65	65	65	65
2	Guillermo Almenara National Hospital	13	13	13	13
3	Jose Casimiro Ulloa Emergency Hospital	6	6	6	6
4	FAP-Peruvian Air Force Hospital	20	20	20	20
5	Military Hospital of Peru	3	3	3	3

* Completed treatment is defined as no other surgical modality to control bleeding at the targeted surgical site(s).
Ref: Individual Patient Data Listing, section 12.4, page 119.

7.2 Demographic and Other Baseline Characteristics

Table 10 summarizes baseline characteristics regarding the treatment group.

Table 10 Baseline Characteristics

Baseline Characteristics	Treatment Group			
	Adult (N=107)		Pediatric (N=12)	
	M	F	M	F
	56 (52.3%)	51 (46.8%)	6 (50%)	6 (50%)
Pre-Op Mean (SD)				
HBG (g/dl)	13.90±1.56	12.43±1.02	15.02±1.83	14.62±0.46
HCT (%)	41.58±4.71	36.56±5.66	46.37±2.71	43.72±1.16
PT (sec)	11.58±0.22	11.68±0.26	11.68±0.19	11.42±0.17
PTT (sec)	34.56±12.91	32.26±12.54	32.26±12.54	23.67±0.82
Anticoagulant Therapy (Heparin) Number	16 (13.4%)	12 (10.1%)	0 (0.0%)	0 (0.0%)
Dose (U/Kg) Mean (SD)	303.1±112.1	248.9±110.8	0.00	0.0
Associated Illness				
Arterial Hypertension	16 (13.4%)	11 (9.2%)	0 (0.0%)	0 (0.0%)
Diabetes Mellitas	3 (2.5%)	2 (1.7%)	0 (0.0%)	0 (0.0%)
Depression	3 (2.5%)	8 (6.7%)	0 (0.0%)	0 (0.0%)
Targeted Organ				
heart	15 (5.9%)		0 (0.0%)	
arteries	22 (8.9%)		0 (0.0%)	
brain	4 (1.6%)		0 (0.0%)	
vertebra	8 (3.1%)		0 (0.0%)	
thyroid	2 (0.8%)		0 (0.0%)	
oral	3 (1.2%)		0 (0.0%)	
parotid	1 (0.4%)		0 (0.0%)	
sinuses	2 (0.8%)		0 (0.0%)	
radical neck	5 (2.0%)		3 (1.2%)	
leg amputation	1 (0.4%)		1 (0.4%)	
hip	2 (0.8%)		0 (0.0%)	
femur	2 (0.8%)		0 (0.0%)	
liver	16 (6.3%)		1 (0.4%)	
spleen	6 (2.4%)		0 (0.0%)	
gastro	22 (8.7%)		3 (1.2%)	
pancreas	3 (1.2%)		0 (0.0%)	
gall bladder	8 (3.1%)		0 (0.0%)	
breast	1 (0.4%)		0 (0.0%)	
ovary	1 (0.4%)		0 (0.0%)	
skin-muscle	85 (33.5%)		0 (0.0%)	
lung	1 (0.4%)		0 (0.0%)	
tongue	1 (0.4%)		0 (0.0%)	
bone	31 (12.2%)		4 (1.6%)	

Ref. Individual Patient Data Listing, section 12.4.

7.3 Efficacy Results and Tabulation of Individual Patient Data

7.3.1 Analysis of Efficacy

The primary efficacy measurement defined by the protocol stated that at specified bleeding sites, known for moderate to severe blood loss, SeraSeal would achieve hemostasis 25% faster than cauterization in 90% of the total surgical cases.

The time to hemostasis ranged from 0.03 – 10 minutes, with a mean of 1.59 minutes for SeraSeal, compared to a 2 -90 minute range for cauterization, with a mean of 31.22 minutes, statistical significance ($P<0.0001$) and nearly 20 times faster for clot formation over the control, Table 11. Children treated with SeraSeal significantly achieved hemostasis sooner than children in the control group, with a mean 1.77 minute clotting time compared to a mean 51.69 minutes ($P<0.0001$). Significant time to hemostasis was also observed in SeraSeal treated heparinized patients with a mean 0.72 min. (±0.29) compared to a mean 10.00 min (±8.10) in heparinized patients treated by cauterization ($P<0.0001$). In every SeraSeal surgical case, hemostasis occurred after only one application of the hemostatic agent.

A secondary efficacy measurement was blood loss. The mean blood loss for SeraSeal treated patients was 184.30 ml, with a range of 1-2,000 ml, compared to a mean of 583.19 ml and a 100-3,000 ml range in the cauterization treatment group with a statistical significance of ($P<0.001$). The mean blood loss in SeraSeal treated children was 42.92 ml (±70.60) significantly less compared to a mean 329.17 ml (±219.98) children treated in the control group ($P=0.0003$). There was significant less blood loss in SeraSeal treated heparinized patients, with a mean 347.20 ml (±141.38) to a mean 720.00 ml (±272.34) in heparinized subjects treated by standard surgical methods.

Twenty six patients (24.4%) were on Heparin, with 14 men having a mean dosage of 302.86 U/Kg and 248.91 U for 11 women. There was no significant difference between the two groups ($P=0.2320$). The mean Heparin dosage was 279.12 U/Kg (±110.21). Comparing normal treated patients to Heparin treated patients, the mean SeraSeal dosage was 4,039 IU and 5,076 IU, respectively, statistically significant between the two groups ($P=0.0156$).

There were no therapeutic breaks of SeraSeal to cauterization, achieving 100% success in obtaining hemostasis greater than 25% faster than the employment of cauterization.

Table 11 Efficacy of Seraseal vs. Cauterization

Primary Efficacy	SeraSeal	Cauterization
Total Time to Hemostasis (min)		
n	119	119
mean	1.59	31.22
SD (±)	2.32	19.72
range	0.03 – 10	2 – 90
Blood Loss (ml)		
mean	199.66	595.63
SD (±)	245.29	527.64
range	0-2,000	50-30,000

Time to Hemostasis of Adult and Pediatric and by Gender (min)	SeraSeal				Cauterization			
	Adult		Pediatric		Adult		Pediatric	
	M	F	M	F	M	F	M	F
n	56	51	6	7	56	51	6	6
mean	1.69	1.44	1.33	2.14	28.66	28.82	48.33	54.57
SD (±)	2.64	2.21	0.82	1.34	17.48	17.96	20.41	28.98
range	0.03-10	0.03-10	1-3	1-5	2-60	5-60	10-60	20-90

Total Time to Hemostasis of Heparin Patients (min)	SeraSeal	Cauterization
n	24	24
mean	0.73	10.42
SD (±)	0.29	8.13
range	0.03 – 1	2 – 35

Time to Hemostasis of Heparin Patients by Gender (min)	SeraSeal		Cauterization	
	M	F	M	F
n	14	10	14	10
mean	0.75	0.70	10.36	10.50
SD (±)	0.32	0.26	10.00	4.97
range	0.03-1	0.5-1	2-35	5-20

Secondary Efficacy Total Blood Loss (ml)	SeraSeal	Cauterization
n	119	119
mean	184.30	583.19
SD (±)	243.04	541.63
range	1 – 2,000	100 – 3,000

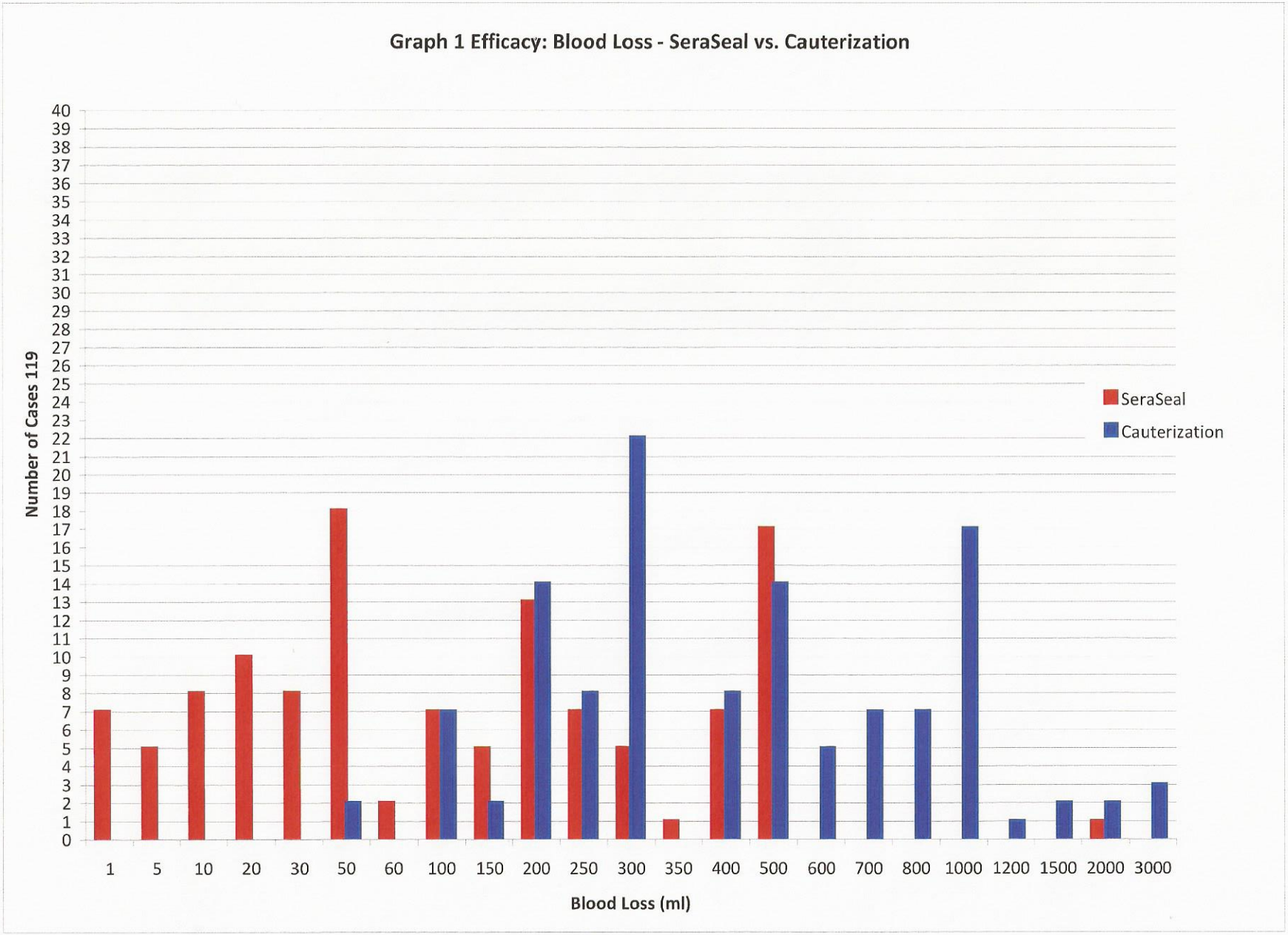
Blood Loss of Normal Patients by Gender (ml)	SeraSeal				Cauterization			
	Adult		Pediatric		Adult		Pediatric	
	M	F	M	F	M	F	M	F
n	56	51	6	6	56	51	6	6
mean	216.23	184.96	75.00	70.83	653.57	546.60	375.00	283.33
SD (±)	299.61	183.85	92.03	4.92	635.24	472.30	311.05	68.31
range	1-2,000	1-500	10-250	5-50	50-3,000	50-2,000	250-400	200-400

Total Blood Loss of Heparin Patients (ml)	**SeraSeal**	**Cauterization**
n	24	24
mean	370.00	766.67
SD (±)	133.97	251.37
range	30 - 500	250 – 1,200

Blood Loss of Heparin Patients by Gender (ml)	**SeraSeal**		**Cauterization**	
	M	F	M	F
n	14	10	14	10
mean	378.57	358.00	771.43	760.00
SD (±)	110.44	167.25	249.39	267.50
range	200-500	30.-500	500-1,200	300-1,000

Number of SeraSeal Applications								
No. Application/No. Case	**Adult**				**Pediatric**			
	M (n=56)		F (n=51)		M (n=6)		F (n=6)	
1	2	(3.6%)	-	(0.0%)	-	(0.0%)	-	(0.0%)
2	10	(17.9%)	13	(25.55)	2	(33.3%)	2	(33.3%)
3	22	(39.3%)	24	(47.0%)	2	(33.3%)	1	(16.7%)
4	9	(16.1%)	7	(13.7%)	2	(33.3%)	-	(0.0%)
5	7	(12.5%)	6	(11.8%)	-	(0.0%)	1	(16.7%)
6	2	(3.6%)	1	(2.0%)	-	(0.0%)	2	(33.3%)
7	3	(5.4%)	-	(0.0%)	-	(0.0%)	-	(0.0%)
8	-	(0.0%)	-	(0.0%)	-	(0.0%)	-	(0.0%)
9	-	(0.0%)	-	(0.0%)	-	(0.0%)	-	(0.0%)
10	1	(1.8%)	-	(0.0%)	-	(0.0%)	-	(0.0%)
Attempts/Bleeds	1 (n=56)		1 (n=51)		1 (n=6)		1 (n=6)	

Ref: Individual Response Data, appendix 12.2.4, page 103.


Graph 1 Efficacy: Blood Loss - SeraSeal vs. Cauterization
Number of Cases 119
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
SeraSeal
Cauterization
1
5
10
20
30
50
60
100
150
200
250
300
350
400
500
600
700
800
1000
1200
1500
2000
3000
Blood Loss (ml)

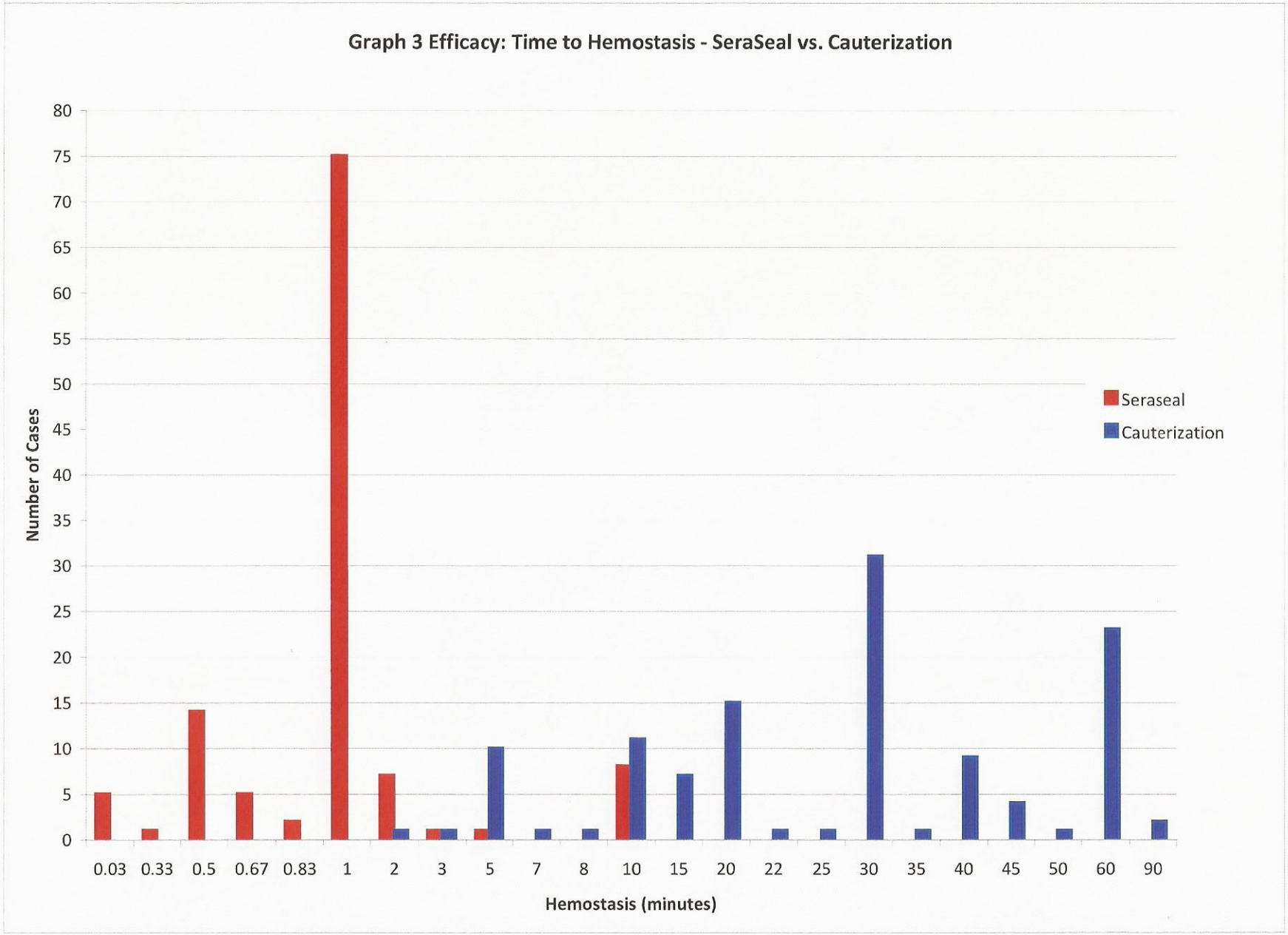

Graph 3 Efficacy: Time to Hemostasis - SeraSeal vs. Cauterization
Number of Cases
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Seraseal
Cauterization
0.03 0.33 0.5 0.67 0.83 1 2 3 5 7 8 10 15 20 22 25 30 35 40 45 50 60 90
Hemostasis (minutes)

Table 12 Heparin Patients Treated by SeraSeal vs. Cauterization

	Treatment Group			
Hemostasis (min)	**SeraSeal**		**Cauterization**	
	n	**%**	**n**	**%**
0.03	1	4.17	0	0.00
0.5	11	45.83	0	0.00
1	12	50.00	0	0.00
2	0	0.00	1	4.17
3	0	0.00	1	4.17
5	0	0.00	8	33.33
7	0	0.00	1	4.17
8	0	0.00	1	4.17
10	0	0.00	6	25.00
15	0	0.00	3	12.5
20	0	0.00	1	4.17
30	0	0.00	1	4.17
35	0	0.00	1	4.17

Ref: Efficacy Response Data Listing by Dosage, section 12.2.7, page 114.

Graph 2 Heparin Patients Treated by SeraSeal vs. Cauterization

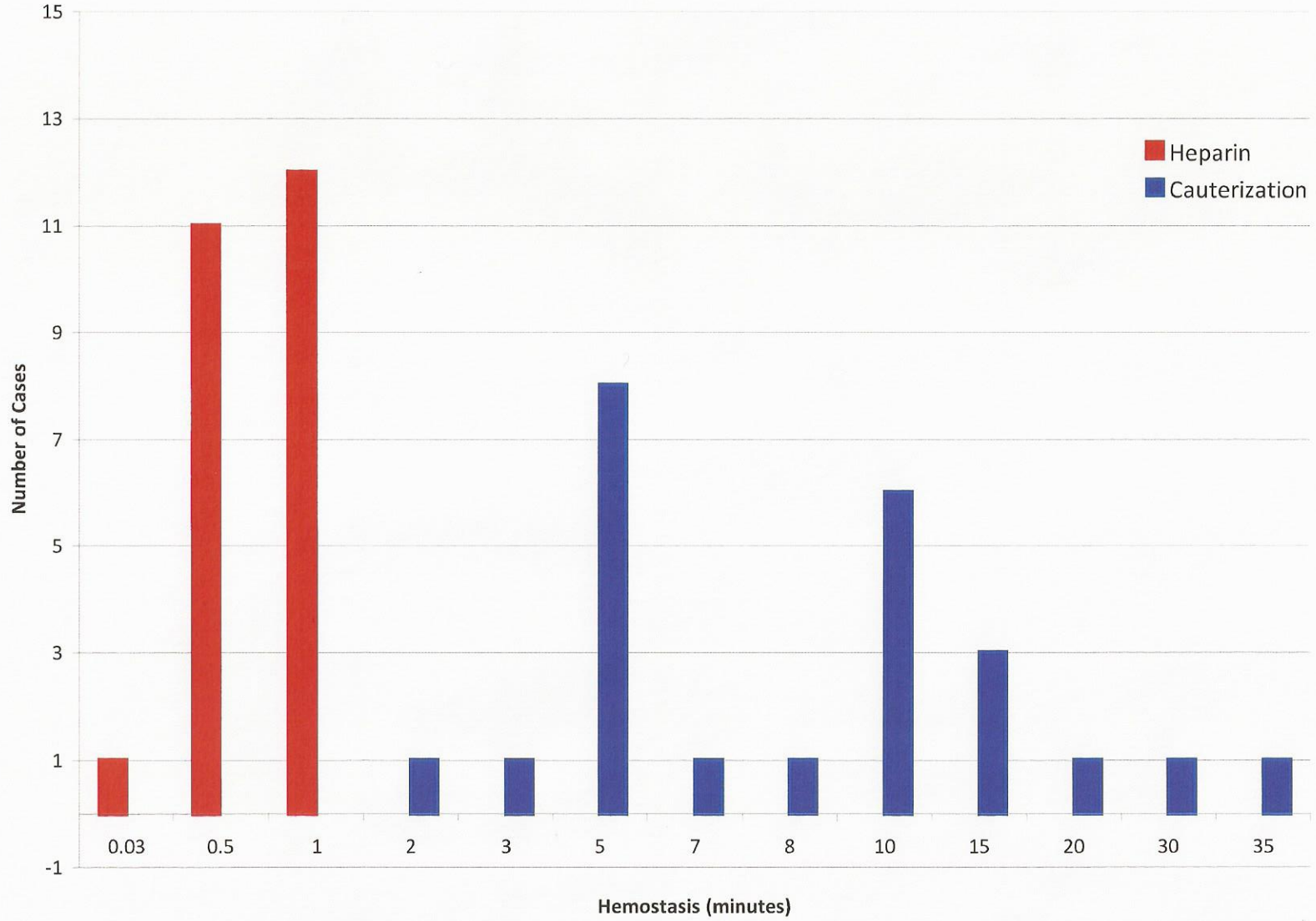
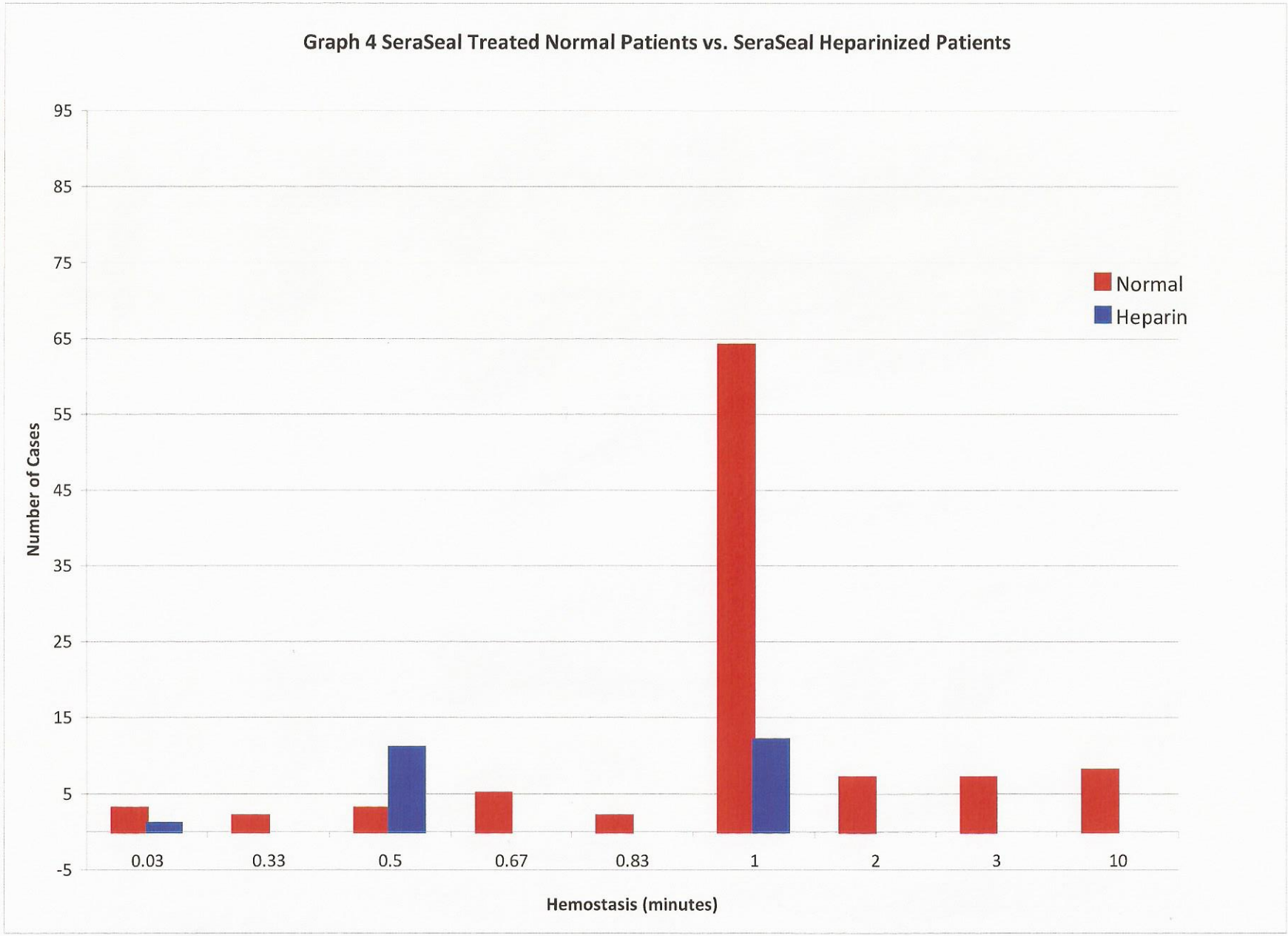


Table 13 SeraSeal Treated Normal Patients vs. SeraSeal Treated Heparinized Patients

	Treatment Group			
Hemostasis (min)	**Normal (n=95)**		**Heparin (n=24)**	
	n	**%**	**n**	**%**
0.03	3	3.16	1	4.17
0.33	2	2.10	0	0.00
0.5	3	3.16	11	45.83
0.67	5	5.26	0	0.00
0.83	2	2.10	0	0.00
1	64	67.37	12	50.00
2	7	7.37	0	0.00
3	1	1.05	0	0.00
10	8	8.42	0	0.00

Ref: Efficacy Response Data Listing by Dosage, section 12.2.7, page 114.


Graph 4 SeraSeal Treated Normal Patients vs. SeraSeal Heparinized Patients
95
85
75
65
55
45
35
25
15
5
-5
Number of Cases
Normal
Heparin
0.03
0.33
0.5
0.67
0.83
1
2
3
10
Hemostasis (minutes)