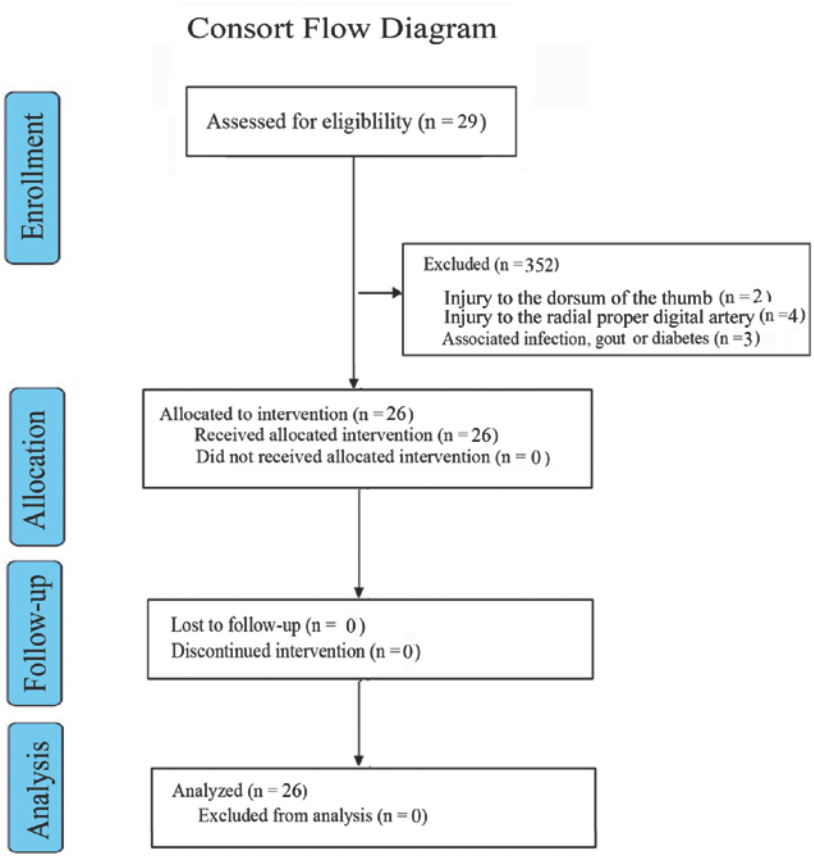
1. Participant Flow



2. Baseline Characteristics

36 thumbs in 36 patients (33 men and 3 women). The mean age at surgery was 34 years (range, 18 to 52 years). The mechanisms of injury included avulsion (n=25), crushing (n=7), and third-degree burn (n=1).

In our series, the average size of the finger pulp defects was 2.3 × 2.1 cm (range, 1.9 × 1.8 cm to 2.6 × 2.1 cm); The mean flap size was 2.5 × 2.4 cm (range, 2.2 × 2.1 cm to 2.9 × 2.5 cm). The mean pedicle length was 2.3 cm (range, 2–2.6 cm).

Table 1. Patient demographic and surgical details.

Case	Age (Year)	Sex	Side	Finger	Defect size (cm × cm)	Flap size (cm × cm)	Pedicle length (cm)
1	24	F	L	Long	1.9 × 2.2	2.2 × 2.4	2.2
2	54	M	R	Ring	2.3 × 2.2	2.5 × 2.4	2.1
3	33	M	L	Index	2.6 × 2	2.9 × 2.5	2.4
4	19	M	R	Long	2.1 × 1.8	2.3 × 2	2.1
5	45	M	R	Ring	2.3 × 2.2	2.5 × 2.5	2.3
6	32	M	L	Long	2.2 × 1.8	2.4 × 1.9	2.6
7	42	M	R	Index	2 × 2.1	2.3 × 2.3	2.5
8	32	M	R	Ring	1.9 × 2.3	2.2 × 3.6	2.2
9	39	M	R	Index	2.4 × 2.2	2.6 × 2.5	2
10	41	M	L	Little	1.9 × 1.8	2.2 × 2.1	2.3
11	49	M	L	Ring	2.3 × 2.1	2.6 × 2.3	2.1
12	32	M	R	Index	2.2 × 2.6	2.4 × 2.8	2.5
13	27	M	R	Long	2.6 × 2.1	2.8 × 2.3	2.6
14	36	F	L	Ring	2.2 × 1.8	2.4 × 2.1	2
15	45	M	R	Ring	2.3 × 2.3	2.5 × 2.6	2.3
16	37	F	R	Long	2.5 × 2.4	2.8 × 2.5	2.1
17	32	M	R	Index	2.6 × 2.1	2.8 × 2.3	2.6
Mean	36				2.3 × 2.1	2.5 × 2.4	2.3

3. Outcome Measures

Table 2. Demographic and Surgical Data on the Patients.

	Study group (n = 37)	Control group (n = 35)	*p*-value
Age (year)	32 ± 5 (24-54)	34 ± 6 (20-51)	0.078
Sex (M : F)	32：5	31 : 4	0.418
Cause (work/sports/traffic/activities)	17/7/5/8	14/10/6/5	0.761
Dominance： Nondominance	23：14	19 : 16	0.795
Injured side (R : L)	22：15	17 : 18	0.844
TBIAO (day)	5 ± 4 (0-9)	4 ± 3 (0-8)	0.832
PAVF (%)	37 ± 9 (23–83)	35 ± 14 (19–75)	0.988
Pre-op fracture displacement (mm)	3 ± 2 (1–5)	3 ± 2 (1–4)	0.462
Post-operative gap/step-off (mm)	0.3 ± 0.5 (0–1)	0.7 ± 0.9 (0–3)	0.015
Excellent (<1 mm) (n)	35	26	
Good (1–2 mm) (n)	2	7	
Poor (>2 mm) (n)	0	2	
Bone Healing (week)	4 ± 1 (3-6)	5 ± 1 (4-6)	0.863
Follow-up (month)	15 ± 3 （12–18）	16 ± 2 （12–17）	0.183

Values are expressed as the mean ± SD (range); TBIAO, time between injury and operation;
PAVF, percentage of avulsed volar fragment;

Table 3. Motion and Strength of Groups.

		Injured side	Opposite side	I/O (%)	*p*-value
CMCEF arc (°)	SG	49 ± 3 (43 - 55)	51 ± 3 (44 - 57)	96 ± 1 (94 - 98)	0.000
	CG	45 ± 7 (41 - 52)	50 ± 9 (42 - 59)	90 ± 3 (84 - 93)	
Thumb abduction (°)	SG	84 ± 6 (75 - 90)	87 ± 5 (77 - 94)	97 ± 1 (93 - 99)	0.000
	CG	76 ± 6 (70 - 82)	86 ± 10 (75 - 96)	88 ± 4 (82 - 92)	
Key pinch (kg)	SG	7.6 ± 0.7 (3.5 - 8.3)	7.9 ± 0.8 (4.0 - 8.7)	96 ± 2 (92 - 97)	0.000
	CG	7.1 ± 0.5 (3 - 7.8)	7.8 ± 0.7 (4.0 - 8.5)	91 ± 3 (84 - 94)	
Grip strength (kg)	SG	45.3 ± 6.1 (24.2 - 47.6)	46.1 ± 7.2 (24.5 - 50.5)	98 ± 1 (96 - 98)	0.000
	CG	43.4 ± 04.1 (25.6 - 47.5)	45.3 ± 6.4 (24.5 - 51.7)	96 ± 3 (85 - 99)	

Values are expressed as the mean ± SD (range); CMCEF, carpometacarpal joint extension-flexion;
SG, study group; CG, control group; I/O, injured side /opposite side;
Grip strength was 6% higher on the dominant side than the nondominant side.

Table 4. Functional Outcomes and Patient Satisfaction.

	Study group (n = 37)	Control group (n = 35)	*p*-value
Kapandji Opposition Score	9.31 ± 0.53 (8 - 10)	8.45 ± 0.98 (7 - 10)	0.000
DASH	1.06 ± 0.48 (0 - 2)	1.77 ± 0.65 (0 - 3)	0.000
Smith and Cooney Score	90 ± 5 (80 - 100)	85 ± 7 (75 - 100)	0.000
Excellent (n)	32	18	
Good (n)	5	12	
Fair (n)	0	5	
Poor (n)	0	0	
Satisfaction (100-mm VAS)	4 ± 3 (0 - 9)	6 ± 4 (0 - 9)	0.000

Values are expressed as the mean ± SD (range); VAS, visual analogue scale

DASH, Disabilities of Arm, Shoulder, and Hand Questionnaire Score.

4. Adverse Events

The disadvantages include the requirement of neurorrhaphy, immobilization of the injured and donor digits for 3 weeks, potential for venous congestion for the first 4 or 5 days after surgery, and a 2-stage procedure.