



Facial Fractures and the National Basketball Association: Epidemiology and Outcomes



Parsa P. Salehi MD¹, Alyssa Heiser BA², Sina J. Torabi BA¹, Babak Azizzadeh MD FACS³, Yan H. Lee MD¹

¹Yale School of Medicine, ²Larner College of Medicine at The University of Vermont, ³CENTER for Advanced Facial Plastic Surgery

Background and Objectives

- Injuries in professional athletes create unique, complex sets of issues for both the athlete and his/her team
- Head, neck, and face injuries account for 10.5% of all NBA game-related injuries
 - Nasal and orbital fractures are more common in the NBA than other sports
- Identify the epidemiology and impact of facial fractures on player performance and return to play (RTP) in the National Basketball Association (NBA)
- Examine performance of players who RTP and the impact of operative intervention
- Discuss prevention strategies to consider in the future
- This is the first study to examine the aforementioned questions in the NBA

Study Design

- Retrospective case-control series

Methods

- Fifty-three NBA players who sustained facial fractures between 1984 and 2018 were identified (**Figure 1**).
- Players with pre- and post injury statistics were included in the performance analysis.
- A control group was matched by age, body mass index (BMI), position, NBA experience, and player efficiency rating. Fisher exact tests and Student t-tests were performed to analyze player demographics and performance variables.

Results

- At the time of injury, the average player's age was 26.17 years, BMI was 24.80 kg/m², and NBA experience was 4.97 years (**Table 1**).
 - The most prevalent types of facial fracture were nasal (47.4%) and orbital (26.3%).
 - 7.5% (n=4) of players suffered multiple facial fractures in one injury occurrence; 5.7% (n=3) suffered multiple facial fractures across different seasons.
- Players missed an average of 3.77 games and 18.21 days prior to RTP.
- Forty-eight players (90.6%) did RTP the subsequent season, whereas 43 of those players (81.1%) met inclusion criteria for performance analysis.
 - Average age of those who did RTP was 26.21 years, which differed significantly from players who did not RTP (30.40 years; P = .022).**
- There was no significant change in performance between pre- and postinjury seasons (**Table 2**).
- Players managed operatively missed significantly more games (8.15 vs. 1.85; P = .034) and days (51.08 vs. 5.53; P = .003) than players managed nonoperatively, **whereas performance was not impacted.**
- Average career length following facial fracture was significantly shorter compared to controls (5.14 vs. 6.42 years; P = .010).**
- A decrease in three-pointer percentage (P = .004) was observed between preindex and postindex seasons for injured players (P=.004).
- 11.3% of players sustained a concomitant concussion.**
- The vast majority of players (84.9%) wore a protective face mask, as recommended, after sustaining facial fracture.

Conclusions

- The majority of players who suffer facial fractures RTP in the NBA and do not experience a significant decline in performance following injury.
- These results should aid physicians caring for basketball players at any level, and may help inform future guidelines for treatment and injury prevention.

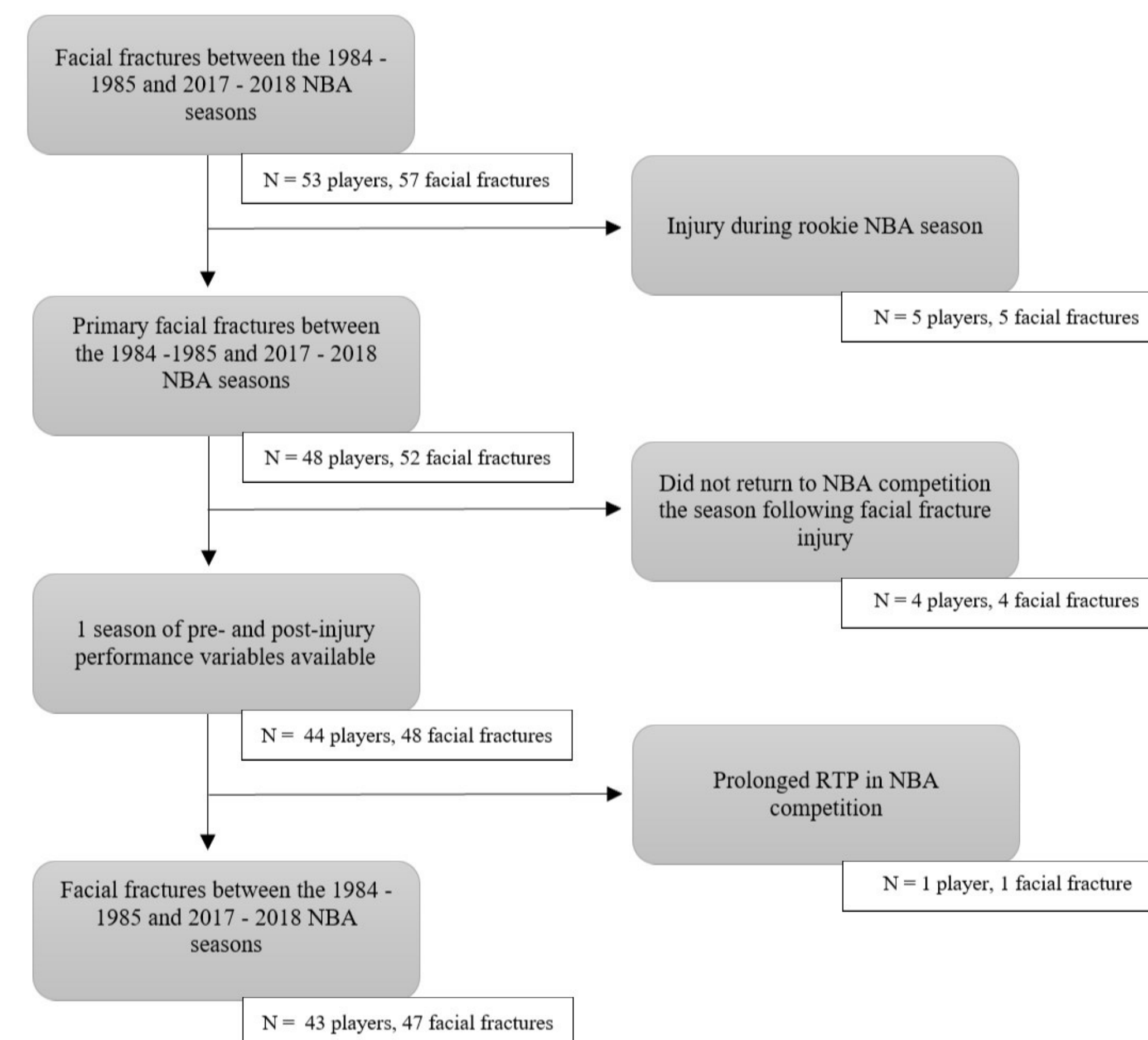


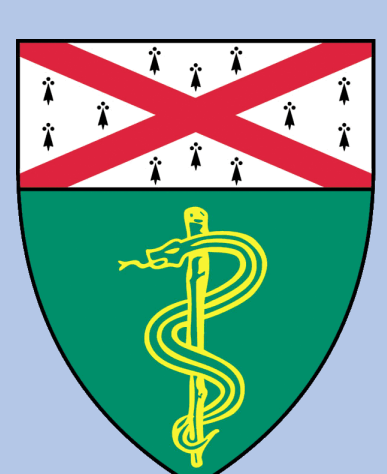
Figure 1. Selection process for inclusion of NBA players who sustained facial fractures between the 1984 to 1985 and 2017 to 2018 seasons for performance analysis

Player Performance Variable	Preindex Season, n = 43	Postindex Season, n = 43	Δ (95% CI)	P Value*
Games played/season	66.07 ± 15.60	65.16 ± 20.33	-0.91 (-8.62 to 6.81)	.814
Games started/season	42.70 ± 30.82	47.83 ± 27.43	5.13 (-2.51 to 12.78)	.182
Minutes played/game	27.99 ± 9.41	29.07 ± 7.75	1.08 (-0.71 to 2.87)	.230
Points/game	13.39 ± 7.18	13.64 ± 7.58	0.25 (-0.97 to 1.47)	.681
Field goals/game	4.92 ± 2.54	5.03 ± 2.65	0.11 (-0.32 to 0.53)	.613
Field goals attempted /game	10.82 ± 5.47	10.92 ± 5.57	0.10 (-0.70 to 0.90)	.801
Field goal percentage/game	45.11 ± 5.68	45.37 ± 5.82	0.27 (-1.64 to 2.18)	.779
Three pointers/game	0.87 ± 0.76	0.86 ± 0.82	-0.01 (-0.16 to 0.15)	.951
Three pointers attempted /game	2.49 ± 2.04	2.52 ± 2.19	0.03 (-0.33 to 0.40)	.849
Three pointer percentage/game	25.53 ± 14.67	22.83 ± 16.28	-2.70 (-5.71 to 0.30)	.077
Free throws/game	2.70 ± 1.91	2.75 ± 2.06	0.05 (-0.30 to 0.41)	.773
Free throws attempted/game	3.50 ± 2.38	3.63 ± 2.62	0.13 (-0.31 to 0.57)	.562
Free throw percentage/game	72.11 ± 16.10	72.94 ± 13.74	0.83 (-3.03 to 4.68)	.668
Offensive rebounds/game	1.25 ± 0.80	1.44 ± 0.99	0.19 (-0.01 to 0.39)	.063
Defensive rebounds /game	3.80 ± 1.74	4.17 ± 1.95	0.38 (-0.11 to 0.86)	.126
Rebounds, total/game	5.04 ± 2.32	5.61 ± 2.66	0.57 (-0.06 to 1.21)	.077
Assists/game	3.15 ± 2.49	3.45 ± 2.88	0.31 (-0.01 to 0.62)	.052
Steals/game	0.94 ± 0.50	1.00 ± 0.50	0.05 (-0.03 to 0.14)	.193
Blocks/game	0.72 ± 0.80	0.70 ± 0.70	-0.04 (-0.18 to 0.10)	.581
Turnovers/game	1.90 ± 1.02	1.92 ± 1.06	0.02 (-0.15 to 0.19)	.847
Box plus/minus	1.41 ± 3.63	1.18 ± 3.98	-0.23 (-1.49 to 1.03)	.717
Performance efficiency rating	16.59 ± 5.56	16.84 ± 5.65	0.25 (-1.03 to 1.53)	.694

Table 2. Comparison of Demographic and Performance Variables Between NBA Players Treated Operatively Versus Nonoperatively for Facial Fractures During the Postindex and Preindex Seasons

Table 1. Demographic Data of All NBA Players Who Sustained Facial Fractures Between the 1984 to 1985 and 2017 to 2018 Seasons

Variable	All, N = 53	Rookies, n = 5	Returned for ≥1 NBA Season, n = 43	Did not RTP or Prolonged RTP the Season Following Injury, n = 5
Age, yr	26.17 ± 4.03	21.6 ± 1.14	26.21 ± 3.65	30.40 ± 4.67
Height, m	2.01 ± 0.09	2.01 ± 0.09	2.02 ± 0.09	1.97 ± 0.09
Weight, kg	100.96 ± 12.38	96.89 ± 11.91	101.95 ± 12.50	96.52 ± 12.46
BMI, kg/m ²	24.80 ± 1.76	24.01 ± 1.65	24.88 ± 1.80	24.89 ± 1.60
Seasons of NBA experience, yr	4.97 ± 4.04	0.00 ± 0.00	5.12 ± 3.72	8.60 ± 4.39
Games missed, no.	3.77 ± 6.82	4.60 ± 7.60	3.77 ± 6.82	2.60 ± 3.71
Average time to RTP in NBA competition, d*	18.21 ± 44.61	20.40 ± 33.76	19.30 ± 48.27	6.60 ± 9.21
Facial fractures, no.	57	5	47	5
Facial fracture type, no. (%)				
Nasal	27 (47.4)	2 (40)	21 (44.7)	4 (80)
Orbital	15 (26.3)	2 (40)	13 (27.7)	0 (0)
Maxilla	7 (12.3)	0 (0)	6 (12.8)	1 (20)
Zygoma	5 (8.8)	0 (0)	5 (10.6)	0 (0)
Mandible	2 (3.5)	0 (0)	2 (4.3)	0 (0)
Frontal sinus	1 (1.8)	1 (20)	0 (0)	0 (0)
Position, no. (%)				
Small forward	12 (22.6)	0 (0)	11 (25.6)	1 (20)
Shooting guard	11 (20.8)	2 (40)	7 (16.3)	2 (40)
Center	11 (20.8)	1 (20)	10 (23.3)	0 (0)
Power forward	10 (18.9)	1 (20)	8 (18.6)	1 (20)
Point guard	9 (17)	1 (20)	7 (16.3)	1 (20)
Facial fracture timing, no. (%)				
Preseason	6 (10.5)	1 (20)	5 (11.6)	0 (0)
Regular season	46 (80.7)	3 (60)	35 (81.4)	4 (80)
Playoffs	5 (8.8)	1 (20)	3 (7.0)	1 (20)
Facial fracture event, no. (%)				
Game	47 (88.7)	4 (80)	39 (90.7)	4 (80)
Practice	6 (11.3)	1 (20)	4 (9.3)	1 (20)
Concussion status, no. (%)				
Yes	6 (11.3)	1 (20)	5 (11.6)	0 (0)
No	47 (88.7)	4 (80)	38 (88.4)	5 (100)
Management, no. (%)				
Operative	17 (32.1)	2 (40)	13 (30.2)	2 (40)
Nonoperative	36 (67.9)	3 (60)	30 (69.8)	3 (60)
Mask status, no. (%)				
Yes	45 (84.9)	4 (80)	37 (86.0)	4 (80)
No	8 (15.1)	1 (20)	6 (14.0)	1 (20)



Yale University School of Medicine



Contact:

Parsa Pamenari Salehi, MD
Yale School of Medicine
333 Cedar Street, New Haven, CT
Parsa.Salehi@yale.edu
203 909 7954