

Prevalence of Medial Ulnar Collateral Ligament Surgery in 6135 Current Professional Baseball Players

A 2018 Update

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Background: As the incidence of ulnar collateral ligament (UCL) surgery continues to rise rapidly, an update on the current prevalence and demographics in professional baseball players is warranted.

Hypothesis: The prevalence of UCL reconstruction in Major League Baseball (MLB) and Minor League Baseball (MiLB) players will be higher than that previously reported, and the increase in prevalence will be most notable in MiLB pitchers.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: During the 2018 baseball season, an online questionnaire regarding a history of UCL surgery was distributed to the certified athletic trainers of all 30 MLB organizations. These trainers then administered the survey to all players within their organizations, including MLB, MiLB (AAA, AA, High A, Low A, High Rookie, Low Rookie), and Dominican Summer League (DSL) players. Demographics were compared between MLB, MiLB, and DSL players. Results of this 2018 survey were compared with previously published data from the 2012 season to assess the change over time.

Results: There were 6135 professional baseball players who completed the survey (66% response rate). The prevalence of UCL reconstruction in all MLB and MiLB players was 13% (637/4928), while the prevalence in DSL players was 2% (20/1207) ($P < .001$). The prevalence in all MLB and MiLB players (13%) and pitchers (20%) both increased significantly from 2012 ($P < .001$). MLB pitchers reported a higher prevalence of UCL reconstruction than did MiLB pitchers (26% vs 19%, respectively; $P < .001$). In 2018, the prevalence of UCL reconstruction has increased significantly in MiLB pitchers (19% vs 15%, respectively; $P < .001$) and pitchers aged 21 to 30 years (22% vs 17%, respectively; $P < .001$) compared with 2012. Additionally, United States–born pitchers were more likely to have undergone UCL reconstruction compared with Latin America–born pitchers (23% vs 13%, respectively; $P < .001$).

Conclusion: The prevalence of UCL reconstruction has increased significantly in professional baseball players over the past 6 years from 10% to 13%. Ultimately, the prevalence of UCL reconstruction has increased most significantly since 2012 in MiLB pitchers, pitchers aged 21 to 30 years, and pitchers born in the United States.

Keywords: ulnar collateral ligament; elbow; Tommy John; baseball; reconstruction; prevalence

The incidence of ulnar collateral ligament (UCL) surgery in baseball players continues to increase at all levels, including youth, high school, collegiate, and professional.^{2,6,9,12,16,17} Recently, 2 comprehensive reports regarding the incidence of UCL surgery in professional baseball were published in 2018, which demonstrated a significant increase in the annual rates of UCL

reconstruction for both pitchers and position players.^{2,3} Furthermore, the increase in UCL surgery has demonstrated the greatest impact on the younger population of baseball players, especially those aged 15 to 19 years.^{9,12} In the professional ranks, UCL surgery has greatly increased over the past 5 years in younger-aged minor league players,² and this surgery represents the most significant source of time out of play in professional baseball.⁵ Although UCL injuries occur in other sports, the highest rate of incidence is observed in baseball because of the mechanics of throwing, especially pitching, which

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places high tensile stress on the medial elbow compartment with lateral compressive forces.^{1,10,11,14,15}

The only study to date reporting the prevalence of UCL surgery in professional baseball players was reported in a 2015 epidemiological study.⁷ More than 5000 professional baseball players were surveyed during the 2012 season, with results demonstrating 25% of Major League Baseball (MLB) pitchers and 15% of Minor League Baseball (MiLB) pitchers had undergone prior UCL surgery. The effect of a UCL injury on professional baseball players is often severe, as it represents the most likely injury to end a player's season (60% season ending).⁵ Furthermore, Conte et al⁶ reported that MLB pitchers required a mean time of 17.8 months to return to their prior level of competition. Similarly, Camp et al² reported that both MLB and MiLB pitchers returned to their prior level of play at a mean of roughly 16.6 months. The fact that injury and reconstruction rates are on the rise not only adversely affects the players but also has the potential to affect their teams and MLB as a whole because of the increasing annual costs of paying and replacing players on the disabled list.⁶

Given the recent trends previously outlined (overall increase in the annual incidence of UCL surgery in professional baseball players) paired with the significant time out of play and salary loss to professional baseball, an update to the 2012 data is needed. Therefore, the primary aims of this study were to (1) describe the current prevalence and demographics of UCL reconstruction in all professional baseball players, (2) compare the current results with those published from 2012, and (3) identify risk factors and subgroups with higher rates of UCL reconstruction. We hypothesized that the prevalence of UCL reconstruction has increased in all professional players since 2012 and that the increase will be largely a result of an increased prevalence in MiLB pitchers.

METHODS

After review and exemption by an institutional review board, this study was conducted using an online questionnaire (SurveyMonkey) administered during the 2018 professional baseball season. It was distributed to the head athletic trainers for each of the 30 MLB organizations, MiLB affiliates (AAA, AA, High A, Low A, High Rookie, Low Rookie), and Dominican Summer League (DSL) affiliates. The trainers administered the survey to all players on their respective teams. The DSL is a 45-team Latin America-based MiLB-affiliated league in which players must

have fewer than 4 years of prior minor league service and may not be draft-eligible in the United States (US) or Canada. The trainers were available to all players to assist with the completion of the questionnaire as needed. The questionnaire was initially disseminated in July 2018, and all responses were collected by October 2018. The questionnaire was made available in English and Spanish, and players were allowed to complete it in the language of their choice. The survey consisted of a minimum of 8 and maximum of 108 multiple choice questions, depending on how the participants responded. Logic was built into the survey tool so that players with no history of UCL surgery were required to complete only the minimum number of questions, while those with a history of UCL surgery provided more information. Players who did not answer all of the questions associated with their subgroup were excluded.

The questionnaire asked for a multitude of player demographic information, such as age, handedness, position, level of play, country of origin, and time in professional baseball, among others. For players with a history of UCL surgery, surgical information collected included date of surgery, type of surgery (repair vs reconstruction), graft utilized, concomitant procedures, and primary versus revision procedure, among others.

The collected data were stored in Excel (2010; Microsoft) and analyzed with JMP Pro (v 14.1.0; SAS Institute). The demographics of the participants were compared between MLB, MiLB, and DSL players. Data were reported collectively (all leagues) and separately for MLB, MiLB, and DSL. Continuous variables (age, years of professional baseball, etc) were compared between MLB and MiLB pitchers utilizing the Student *t* test ($P < .05$), and categorical variables (position, country of origin, etc) were similarly compared utilizing chi-square analysis ($P < .05$). The results of this 2018 UCL reconstruction prevalence survey were compared with previously published results from the 2012 season⁷ utilizing 2-sided chi-square hypothesis testing ($P < .05$). As DSL players were not included in the 2012 study, DSL players were not reported as part of the MLB or MiLB population in the present study.

RESULTS

There were 6135 professional baseball players who met inclusion criteria and completed the survey in its entirety. With a total population of 9345 players across all of professional baseball at the time of survey distribution, this resulted in an overall response rate of 66%. This included

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Ethical approval for this study was waived by the Mayo Clinic Institutional Review Board (protocol No. 17-006455).

TABLE 1
Demographics^a

			P Value	
	MLB (n = 699)	MiLB (n = 4229)	(MLB vs MiLB)	DSL (n = 1207)
Age, y	27.9 ± 3.9	22.5 ± 2.9	<.001	18.0 ± 1.6
Experience as professional, y	8.7 ± 4.0	3.0 ± 3.0	<.001	1.3 ± 2.5
Age category, y			<.001	
<21	8 (1)	944 (22)		1136 (94)
21-25	215 (31)	2788 (66)		70 (6)
26-30	296 (42)	423 (10)		0 (0)
31-35	158 (23)	67 (2)		0 (0)
>35	22 (3)	7 (<1)		1 (<1)
Position			.47	
Pitcher	397 (57)	2340 (55)		632 (52)
Nonpitcher	302 (43)	1889 (45)		575 (48)
Country of origin			.008	
United States	487 (70)	2704 (64)		8 (1)
Dominican Republic	80 (11)	669 (16)		658 (55)
Venezuela	63 (9)	418 (10)		412 (34)
Other	69 (10)	438 (10)		129 (11)

^aValues are presented as mean ± SD or n (%). DSL, Dominican Summer League; MiLB, Minor League Baseball; MLB, Major League Baseball.

699 (11%) MLB players, 4229 (69%) MiLB players, and 1207 (20%) DSL players. Individual league response rates were as follows: 74% (699/944) MLB, 65% (4229/6469) MiLB, and 63% (1207/1932) DSL. MiLB players consisted of 592 AAA, 614 AA, 1541 A, and 1482 rookie players. The demographics of all players included in the study are provided in Table 1. MLB players were older and had more years of professional baseball experience compared with MiLB players ($P < .001$). The majority of MLB players were aged ≥ 26 years (68%), whereas the majority of MiLB players were aged ≤ 25 years (88%). Pitchers comprised 56% (2737/4928) of MLB and MiLB players, with the majority (65%) being from the US. Overall, there were more players from the US in MLB (95% CI, 66.1%-73.0%) compared with MiLB (95% CI, 62.5%-65.4%). Additionally, there were fewer players from the Dominican Republic in MLB (95% CI, 9.3%-14.0%) compared with MiLB (95% CI, 14.8%-17.0%). In comparison with MLB and MiLB, DSL players were younger, had fewer years of professional experience, and were more commonly from the Dominican Republic ($P < .001$).

The prevalence of UCL reconstruction in all players is reported in Table 2. The prevalence in all MLB and MiLB players (pitchers and position players) was 13% (637/4928), while the prevalence in DSL players was 2% (20/1207) ($P < .001$). The 13% (95% CI, 12.0%-13.9%) prevalence in MLB and MiLB represents a significant increase compared with the 10% (497/5088) prevalence reported from the 2012 season ($P < .001$). The prevalence of UCL reconstruction in MLB and MiLB pitchers (20%) was much higher ($P < .001$) than in nonpitchers (3%). In comparison with the 2012 season, the prevalence in MLB and MiLB pitchers has

TABLE 2
Prevalence of Ulnar Collateral Ligament Reconstruction in All Players^a

	MLB	MiLB	MLB + MiLB	DSL
Age category, y				
<21	0/8 (0)	46/944 (5)	46/952 (5)	16/1136 (1)
21-25	27/215 (13)	367/2788 (13)	394/3003 (13)	4/70 (6)
26-30	57/296 (19)	92/423 (22)	149/719 (21)	0/0 (0)
31-35	26/158 (16)	15/67 (22)	41/225 (18)	0/0 (0)
>35	6/22 (27)	1/7 (14)	7/29 (24)	0/1 (0)
Total	116/699 (17)	521/4229 (12)	637/4928 (13)	20/1207 (2)

^aValues are presented as n (%). DSL, Dominican Summer League; MiLB, Minor League Baseball; MLB, Major League Baseball.

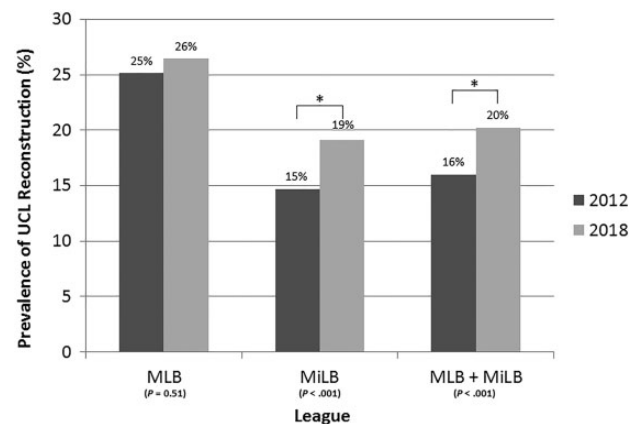


Figure 1. Prevalence of ulnar collateral ligament (UCL) reconstruction among pitchers in Major League Baseball (MLB), Minor League Baseball (MiLB), and MLB + MiLB combined from the 2012 and 2018 seasons. Statistically significant differences are denoted by an asterisk (*).

increased (from 16% to 20%; $P < .001$) (Figure 1), as have the overall number of UCL reconstructions in pitchers (Figure 2). Additionally, MLB pitchers and older pitchers (26-30 years of age) had the highest reported prevalence of UCL reconstruction (Table 3). Pitchers from the US were more likely to have undergone UCL reconstruction in comparison with pitchers from Latin American countries (23% vs 13%, respectively; $P < .001$). In 2018, the prevalence of UCL reconstruction has increased in MiLB pitchers (19% vs 15%, respectively; $P < .001$), pitchers aged 21 to 30 years (22% vs 17%, respectively; $P < .001$), starting pitchers (21% vs 14%, respectively; $P < .001$), and pitchers from the US (23% vs 16%, respectively; $P < .001$) in comparison with the 2012 season. However, the prevalence of UCL reconstruction has not increased in MLB pitchers since 2012 (26% vs 25%, respectively; $P = .51$).

When MLB and MiLB pitchers who had undergone at least 1 UCL reconstruction were compared, several distinctions were noted between the 2 groups (Table 4). The majority of MLB (79%) and MiLB (54%) pitchers underwent their first UCL reconstruction as a professional; however, MiLB

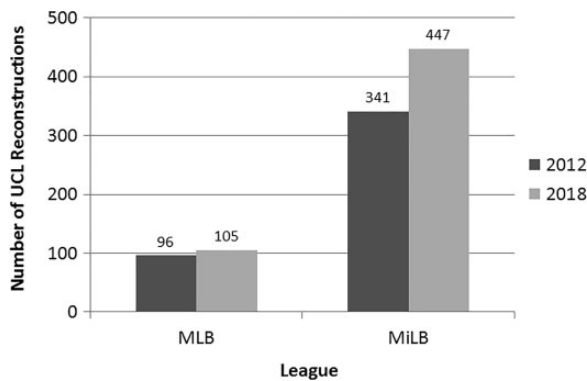


Figure 2. Number of ulnar collateral ligament (UCL) reconstructions among pitchers in Major League Baseball (MLB) and Minor League Baseball (MiLB) from the 2012 and 2018 seasons.

TABLE 3
Prevalence of UCL Reconstruction in MLB and MiLB Pitchers^a

	2018 (n = 552/2737)	P Value	2012 (n = 437/2706)	P Value (2018 vs 2012)
Level of play		<.001		
MLB	105/397 (26)		96/382 (25)	.51
MiLB	447/2340 (19)		341/2324 (15)	<.001
Age category, y		<.001		
21-25	337/1746 (19)		235/1698 (14)	<.001
26-30	134/414 (32)		132/484 (27)	.02
31-35	38/123 (31)		39/108 (36)	.23
Position		.15		
Starting pitcher	271/1271 (21)		161/1176 (14)	<.001
Relief pitcher	281/1466 (19)		276/1530 (18)	.24
Throwing handedness		.46		
Right	422/2060 (20)		328/1969 (17)	<.001
Left	130/677 (19)		109/737 (15)	.03
Place of origin				
United States	430/1867 (23)		322/2007 (16)	<.001
Latin America	100/782 (13)	<.001 ^b	91/577 (16)	.02
Other	18/77 (23)	.93 ^b	24/122 (20)	.47

^aValues are presented as n (%). MiLB, Minor League Baseball; MLB, Major League Baseball; UCL, ulnar collateral ligament.
^bP values are based on a comparison with the United States.

pitchers were more likely to have undergone their first UCL reconstruction in college than MLB pitchers (32% vs 11%, respectively; $P < .001$). MLB pitchers were more likely to have undergone UCL reconstruction with an autograft from their nonthrowing forearm compared with MiLB pitchers (21% vs 10%, respectively; $P = .003$). Additionally,

TABLE 4
Comparison of MLB and MiLB Pitchers With a History of UCL Reconstruction^a

	MLB (n = 105)	MiLB (n = 447)	P Value
Current age, y	28.5 ± 3.7	23.8 ± 2.9	<.001
Experience as professional, y	9.1 ± 4.0	3.7 ± 3.4	<.001
At time of first UCL reconstruction			
Age, y	22.9 ± 4.4	20.4 ± 3.0	<.001
Level of play			<.001
High school	10/102 (10)	56/430 (13)	
College	11/102 (11)	139/430 (32)	
Professional	81/102 (79)	234/430 (54)	
Position			.37
Starting pitcher	63/105 (60)	241/437 (55)	
Relief pitcher	42/105 (40)	196/437 (45)	
No. of UCL reconstructions			.06
1	98/105 (93)	435/447 (97)	
2	6/105 (6)	12/447 (3)	
Graft			.003
Throwing arm forearm	60/104 (58)	275/436 (63)	
Nonthrowing arm forearm	22/104 (21)	43/436 (10)	
Leg	22/104 (21)	105/436 (24)	
Allograft (cadaveric)	0/104 (0)	13/436 (3)	
Surgery before first UCL reconstruction			
Elbow	7/102 (7)	39/428 (9)	.83
Shoulder	2/102 (2)	15/428 (4)	.71

^aValues are presented as mean ± SD or n (%). MiLB, Minor League Baseball; MLB, Major League Baseball; UCL, ulnar collateral ligament.

43% of MLB and MiLB pitchers who underwent UCL reconstruction also underwent a concomitant procedure. These included ulnar nerve transposition (69%), bone spur removal (29%), and loose body removal (12%). Overall, the rates of prevalence in both MLB or MiLB starters (60% vs 55%, respectively; $P = .37$) and relievers (40% vs 45%, respectively; $P = .37$) were similar, as were the rates of UCL revision (6% vs 3%, respectively; $P = .06$) and prior elbow surgery (7% vs 9%, respectively; $P = .83$) or shoulder surgery (2% vs 4%, respectively; $P = .71$).

DISCUSSION

The major findings in this study include a 13% prevalence of UCL reconstruction in all MLB and MiLB players (pitchers and position players) and a 20% prevalence in pitchers only, both of which have increased significantly since 2012. Furthermore, the prevalence of UCL reconstruction has increased in 2018 since 2012 in MiLB pitchers (19% vs 15%, respectively; $P < .001$) and pitchers aged 21 to 30 years (22% vs 17%, respectively; $P < .001$), while the rate in MLB pitchers (26% vs 25%, respectively; $P = .51$) did not change significantly.

This epidemiological study found the prevalence of UCL reconstruction in all MLB and MiLB players to be 13%, while the prevalence in DSL players was 2%. Furthermore, the prevalence in MLB and MiLB pitchers from the US

(23%) was significantly higher than that of Latin American pitchers (13%). The low prevalence of UCL surgery reported in DSL players may be attributed to several factors, including younger player age and fewer years of professional experience. Additionally, the lower prevalence in DSL players and Latin American MLB and MiLB pitchers may be because of reduced access to health care; in other words, a UCL injury may be more likely to be career ending in these populations. However, this is speculative and not addressed in the current literature. It is worth noting that the 2012 prevalence study did not include DSL players, so a direct comparison between 2012 and 2018 could not be made for the DSL. Not surprisingly, the prevalence of UCL reconstruction in MLB and MiLB pitchers (20%) was much higher than in nonpitchers (3%), with 87% (552/637) occurring in pitchers. In MLB players specifically, the prevalence was highest in those older than 35 years of age (27%). This may be expected because MLB players are older, as a whole, compared with MiLB players (27.9 ± 3.9 vs 22.5 ± 2.9 years, respectively; $P < .001$). However, the relationship of age, level of play, and UCL reconstruction does warrant further evaluation. Camp et al² reported that MLB pitchers demonstrate increased survivorship, or time free from revision while still playing professional baseball, compared with MiLB pitchers (4.8 vs 3.2 years, respectively; $P < .001$) who had undergone UCL reconstruction. In their study, 80% of MLB pitchers were able to return to their same level of play, whereas only 69% of MiLB pitchers were able to return to their respective level. This combination of findings may potentially be attributed to a talent bias at the MLB level, increased pressure on MLB pitchers to return to play, increased investment in players by MLB organizations, access to more experienced/specialized surgeons, or increased desire to prolong their career because of salary considerations. Of additional note, the prevalence in starting MLB and MiLB pitchers (21%) was statistically similar to that of relief pitchers (19%), suggesting that the type of pitcher does not incur a higher risk of UCL reconstruction.

The current study found a statistically significant increase in the prevalence of UCL reconstruction in all MLB and MiLB players when compared with the prevalence reported in 2012 (13% vs 10%, respectively).⁷ This finding is important in providing an update to the current literature and an understanding of UCL reconstruction among baseball players. In the lay press, it has been reported that the number of UCL reconstructions is on the decline because of a decreased incidence in MLB pitchers.¹⁸ The present study demonstrates a more accurate and up-to-date quantification of the current epidemiology of UCL reconstruction and supports our hypothesis that the prevalence of UCL reconstruction has increased in all professional players. Similarly, these findings are well aligned with recently published studies.^{2,6} Camp et al² demonstrated an annual increase in the rate of UCL reconstruction in all MLB and MiLB players between 1974 and 2016. Conte et al⁶ also reported an annual increase in UCL reconstruction in MLB players from year to year between 1974 and 2015, with roughly one-third of all procedures having occurred between 2011 and 2015.

Furthermore, we confirmed our hypothesis that the greatest increase in UCL reconstruction in professional baseball players would occur in MiLB pitchers. In 2018, the prevalence of UCL reconstruction had increased in MiLB pitchers (19% vs 15%, respectively) and pitchers aged 21 to 30 years (22% vs 17%, respectively) in comparison with the 2012 season. Similarly, over the past 20 years, MiLB players have comprised a steadily increasing proportion of all UCL reconstructions compared with MLB players.^{2,3} These findings are in agreement with Erickson et al,⁹ Hodgins et al,¹² and Mahure et al,¹⁶ who have each recognized that baseball players from 15 to 19 years of age demonstrate the highest percentage increase in UCL surgery, followed by 21- to 26-year-old players. Of note, there was no significant change in the prevalence in MLB pitchers (who are older) from the 2012 to 2018 studies (25% vs 26%, respectively).

Additionally, the prevalence of UCL reconstruction in US-born pitchers increased in 2018 compared with 2012 (23% vs 16%, respectively) while decreasing in Latin American pitchers (13% vs 16%, respectively). This is a significant development, as in 2012, no difference in the prevalence of UCL reconstruction between US-born and Latin America-born pitchers was reported.⁷ The discrepancy between US-born and Latin America-born pitchers may possibly be attributed to factors that have been previously mentioned, such as reduced access to health care in these countries or the hyperawareness of UCL injuries in the US.

When further evaluating pitchers who had undergone at least 1 UCL reconstruction, this study demonstrated that the majority of MLB and MiLB pitchers underwent their first UCL reconstruction as a professional (59%; 315/532). However, MLB pitchers were significantly more likely than MiLB pitchers to have undergone their first UCL reconstruction as a professional (79% vs 54%, respectively). This finding is in line with the previously described current literature, as MLB pitchers demonstrate increased survivorship, a higher rate of return to previous levels of play, and longer professional careers after UCL reconstruction compared with MiLB pitchers.² Furthermore, MiLB pitchers were significantly more likely than MLB pitchers to have undergone their first UCL reconstruction at the collegiate level (32% vs 11%, respectively). This finding is likely attributed to MiLB pitchers being generally younger with fewer years of professional baseball experience in comparison with MLB pitchers, such that MiLB pitchers with a history of UCL reconstruction would more likely have undergone surgery before professional play. Additionally, both Camp et al⁴ and Wymore et al¹⁹ demonstrated that pitchers with a history of UCL reconstruction as amateurs are increasingly being selected in the MLB draft. This may also contribute to the increased prevalence observed in MiLB from 2012 to 2018.

Of the MLB and MiLB pitchers who underwent UCL reconstruction, 9% had undergone previous elbow surgery, and only 3% had undergone previous shoulder surgery. Although this study does not have details regarding prior surgical procedures, these players represent a small proportion of the study population, which is a similar finding

to the 2012 study.⁷ As a result, it does not appear that returning to pitching after shoulder or elbow surgery serves as a significant risk factor for future UCL injuries. At the time of UCL reconstruction, 43% of pitchers underwent a concomitant procedure, the most common of which were ulnar nerve transposition (69%), bone spur removal (29%), and loose body removal (12%). Potential reasons for the high rate of concomitant ulnar nerve transposition may be attributed to the fact that older UCL reconstruction techniques require obligatory transposition.^{8,13} Additionally, the ulnar nerve commonly becomes neuropathic because of elbow valgus torque generated while pitching, and this is treated with concomitant transposition during UCL reconstruction. However, because of more recent recommendations against obligatory ulnar nerve transposition, the prevalence of concomitant transposition may decrease in the coming years, but this treatment decision should be individualized and ultimately left to the patient and treating physician.⁸

Although we believe that this study provides an essential literature update and contributes to the understanding of UCL reconstruction among professional baseball players, several limitations exist. First, this study reported the prevalence of UCL reconstruction rather than the incidence. As a result, professional baseball players at all levels who underwent UCL reconstruction but are no longer in professional baseball were not captured. Second, the data were gathered by a self-reporting questionnaire, which may introduce a response and/or misclassification bias regarding type of surgery, type of graft, and concomitant procedures, among others. However, given the commonality of knowledge surrounding UCL reconstruction (Tommy John surgery) among professional baseball players, we believe that self-reporting in this case is likely accurate. Additionally, the athletic trainers who administered the survey were available to assist the athletes and had access to each athlete's medical history. Third, the questionnaire was distributed in English and Spanish, but a small number of players in the study may not have been fluent in either of those languages. Accordingly, the questionnaire was distributed by each team's certified athletic trainer with the capability of answering any questions that arose to ensure players' understanding. Fourth, the response rate was 66%, such that not all players in professional baseball completed the survey. Fifth, the current level of play was self-proclaimed by the respondents and does not delineate between MLB and MiLB players who have played in MLB, MiLB, or both throughout spring training and official MLB/MiLB seasons leading up to the time of the survey. Last, multivariate analysis was not utilized to evaluate the risk factors for increased prevalence while taking into account the effects of multiple potential contributing variables.

CONCLUSION

The prevalence of UCL reconstruction has increased significantly in professional baseball players over the past 6

years, from 10% in 2012 to 13% in 2018. During that time span, the prevalence in pitchers has increased from 16% to 20%, with 26% of MLB and 19% of MiLB pitchers having a history of the surgical procedure. Ultimately, the prevalence of UCL reconstruction has increased most significantly in MiLB pitchers and pitchers aged 21 to 30 years, which is well aligned with the increased incidence reported in the current literature. Interestingly, the rates of UCL reconstruction remain low in DSL players and those born outside of the US. UCL surgery represents significant time out of play and salary loss to professional baseball players, and continued efforts should be made to address the rising prevalence of UCL reconstruction in all players, especially in the younger population.

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