INTRODUCTION

Meniscal function is essential to the normal function of the knee joint. The menisci act as joint filler, compensating for gross incongruity between femoral and tibial articulating surfaces. So located, the menisci prevent capsular and synovial impingement during flexion-extension movements. The menisci are believed to have a joint lubrication function, helping to distribute synovial fluid throughout the joint and aiding the nutrition of the articular cartilage. They undoubtedly contribute to stability in all planes but are especially important rotary stabilizers and are probably essential for the smooth transmission from a pure hinge to a gliding or rotary motion as the knee moves from flexion to extension.

Traumatic lesions of the menisci are produced most commonly by rotation as the flexed knee moves toward an extended position. The medial meniscus, being far less mobile on the tibia, can become impaled between the condyles, and injury can result. The most common location for injury is the posterior horn of the meniscus, and longitudinal tears are the most common type of injury. The length, depth and position of the tear depends on the position of the posterior horn in relation to the femoral and tibial condyles at the time of injury.
MATERIALS AND METHODS
This study includes 20 cases of meniscal injuries of knee treated by closed arthroscopic partial meniscectomy or repair at the Department of Orthopedics, Dr. DY Patil Medical College, Pune, from January 2015 to January 2016. Follow up has been done up to 6 months.

This is a prospective time-bound study conducted during the period from January 2015 to January 2016. Sample size consists of 20 patients.

Selection of the patients
Patients with clinically suspected meniscal injury were admitted, thoroughly examined clinically, routine investigations were done and documented. These cases were posted for diagnostic and therapeutic arthroscopy.

Anaesthesia: All patients were administered spinal anaesthesia.
Tourniquet: Esmarch or pneumatic tourniquet was used.

RESULTS
The study consists of 20 cases of meniscal injuries with or without ACL tear, treated surgically by partial meniscectomy maximum incidence of meniscal injuries was found between 20 and 30 years age groups. Most of the patients had motor vehicle accidents and others were sports persons and manual workers. Meniscal injuries are common in males which may be reflection of male being more involved in aggressive sporting and manual activities that predispose to rotational injuries of the knee.

The age ranges from 10 to 40 years with mean age of 27.05 years in our series of meniscal injuries (Table 1).

Seventeen patients were male (85%) and 3 patients were female (15%) in our series of meniscal injuries.

Out of 20 cases in our series of meniscus injuries, right knee was involved in 11 cases and left knee was involved in 9 cases (Table 2).

Thirteen patients (65%) had meniscal injuries due to motor vehicle accident, two patients (10%) due to sports-related injuries and five patients (25%) due to other cause (Table 3).

Thirteen isolated meniscal injuries found in our series of study and six meniscal injuries associated with ACL/PCL tear, one meniscal injury associated with discoid meniscus in lateral meniscus (Table 4).

Out of 20 cases in our series of meniscal injuries, 10 cases were of longitudinal tear (50%), 5 cases of oblique tear (25%), 3 cases of horizontal tear (15%), 1 case of radial tear and 1 case of discoid meniscus with tear (5%) (Table 5).

Functional outcome was assessed based on Lysholm score and Tapper and Hoover grade. Based on patients complaints, physical examination findings were calculated according to Lysholm knee scoring system and graded according to Tapper and Hoover system.

DISCUSSION
Treatment of meniscal injuries has evolved from conservative management, open meniscectomy to closed partial arthroscopic meniscectomy.
Simpson et al.\(^1\), reviewed a comparative analysis of open and close meniscectomy results and confirmed the overall economical and therapeutic advantage of arthroscopic partial meniscectomy over open meniscectomy. Other authors have reported short hospital stay and early return to work and sports\(^1\)\(^\text{--}\)\(^4\). Majority of our patients were males in range of 20–30 years which may be reflection of male being more involved aggressively in sporting and manual activities which are common to cause meniscal injuries. In series of Simpson et al.\(^1\) the mean age of the 230 patients was 30.7 years (range 7–67 years) nearly half of them were in third decade men and boys, formed 90% of the series. In our series 65% of cases were motor vehicle accidents with twisting injuries, 10% included sports related injuries and other injuries were 25%. Thus motor vehicle accident and sports related injuries are the common causes of meniscal injuries.

Incidence of type of meniscal tear in our study was 13 cases isolated meniscal tear, 6 cases associated tear of ACL/PCL, and 1 case was associated with disoid meniscus. In our study, longitudinal (bucket handle) tear 10 cases (50%), oblique tear 5 cases (25%), horizontal tear 3 cases (15%), radial tear one case (5%), complex tear (disoid meniscus) one case (5%) were found. Whereas in series of Rao SK and Rao PS\(^5\) longitudinal (bucket handle) tear 63.72%, radial tear 7.87%, degenerative tear 7%, other type 21.15% were found.

In series of Dandy\(^6\) vertical (longitudinal) tear was common than the other type of meniscal tear.

Functional outcome results in our series were excellent 70%, good 25%, fair 5% as compared with the results of Rao SK and Rao PS\(^5\) was excellent 80%, good 10% and poor 10%.

In series of Umar\(^7\), isolated meniscal injuries were 93% excellent, 7% fair result by criteria of Tapper and Hoover, 75% had excellent to good result and 25% had fair results in meniscal injuries associated ACL deficiency.

Majority of our patients returned to their premeniscal injury activity in 14.35 days whereas in series of Dandy\(^8\) it was 10.5 days.

During intraoperative period we had no incidence of breakage of instrument in knee joint. No incidence of infection, deep vein thrombosis (DVT). Thus arthroscopic partial meniscectomy has many advantages in the treatment of meniscal injuries. Arthroscopic meniscectomy reduces hospital stay, gives early relief of symptoms, low morbidity and patients return to their work early and minimal complications.

Hence arthroscopic partial meniscectomy is a preferred treatment of choice for management of meniscal injuries.

Meniscal injuries are being on a rise due to increased sporting activities, leading to disabilities in sporting and other activities. Treatment of such injuries is gaining importance and arthroscopy has the advantage of minimal invasive surgery in preventing extensive damage to the much complicated anatomy of the knee. Hence it is worth to have a study of this subject.

Tapper et al.\(^9\)\(^\text{--}\)\(^10\) in a series of 213 patients with uncomplicated meniscus injuries were studied from 10 to 30 years after meniscectomy to determine the late effects of meniscectomy.

Delay of operation after injury did not affect the ultimate result. Patients less than 20 years old at the time of operation had excellent and good results. There was no difference in results between total and partial meniscectomy except in bucket handle tear. Leaving the peripheral arm intact in uncomplicated bucket handle tear produced the most excellent results. No alteration in physical, occupation and non-contact sports. Correlate roentgenographic appearance with clinical results. The meniscectomy site was readily apparent in 94 of 110 patients (85%) and 68% of patients had satisfactory clinical results, but only 45% of men and 10% of women had symptom free knees.

Meginty et al.\(^11\)\(^\text{--}\)\(^\text{--}\)\(^12\): Studied 128 cases of meniscectomy, 89 total and 39 partial and evaluated the relative postoperative morbidity. The patients who had partial meniscectomy gave better subjective functional and anatomical results in all the criteria.

Gillquist and Oretorp\(^13\): Studied a series of 125 patients on whom partial arthroscopic meniscectomy was performed reported 87% excellent or good results in isolated meniscal injuries in patients with coexistent degenerative arthritis. They reported 70% excellent or good results and 29% fair or poor results of which half of them claimed that knee function was improved by surgery.

Tregoning\(^14\): Review of early results of consecutive series of 45 bucket handle or flap tear of meniscus treated by closed partial meniscectomy over a 2-year period concluded that closed partial meniscectomy for those common meniscal tears is successful in the early relief of symptoms if all unstable fragments are excised and followed by rapid rehabilitation. Also the procedure has high rate of acceptance by patients.

Whipple et al.\(^15\): Interview of 102 patients 3 to 4 years after the surgery revealed that symptoms related to disruption of the meniscus can be totally or significantly reduced in 99% cases. Arthroscopic meniscectomy has proved safe and effective and it is associated with low postoperative morbidity and early return to function.

Simpson et al.\(^1\)\(^\text{--}\)\(^2\): Reviewed 230 patients an average of 34 months after they had undergone partial or total meniscectomy open and arthroscopic meniscectomies were compared. Arthroscopic partial meniscectomy resulted in a significant reduction of inpatient stay and early return to function.

Dandy\(^16\): Studied the anatomy of 1000 symptomatic meniscus lesions was described and related to age of the patient and treated by arthroscopic study. He found meniscal lesions were common in the right knee (56.5%), and 81% of them were men. Of the medial meniscus tears, 75% were vertical, 23% were horizontal tears. Vertical tear of the medial meniscus occurred most often in the fourth decade and horizontal tears in the fifth decade. There were 22% type I, 37% type II.
and 31% of type III. Vertical tears 62% of type I tears and 23% of type II tears had locked fragments. Superior flaps were 6 times more common than inferior flaps. Lateral meniscus lesions 54% were vertical tears and 15% oblique, 15% myxoid, 4% shunted, and 5% were lesions of discoid menisci. Commonest pattern of tear in the lateral compartment (27%) was a vertical tear involving half the length and half the width of meniscus.

CONCLUSION

Incidence of meniscal injuries is most common due to motor vehicle accident and other causes being sports related injuries and fall by slip. Arthroscopic meniscectomy is a minimally invasive technique, advantage of which includes early return to work, minimal complications, early post operative rehabilitation, short duration of hospital stay. Hence this is the preferred technique for treatment of meniscal injuries. But it is a technically difficult procedure with steep learning curve.

REFERENCES