

## Index of content

|                                |     |
|--------------------------------|-----|
| • INTRODUCTION .....           | 1   |
| • ANATOMY .....                | 3   |
| • BIOMECHANICS .....           | 12  |
| • AETIOLOGY .....              | 18  |
| • CLINICAL PICTURE .....       | 25  |
| • RADIOLOGY .....              | 36  |
| • CONSERVATIVE TREATMENT ..... | 53  |
| • SURGICAL TREATMENT .....     | 61  |
| • MATERIAL & METHODS .....     | 74  |
| • RESULTS .....                | 82  |
| • DISCUSSION .....             | 103 |
| • CONCLUSION .....             | 115 |
| • ENGELISH SUMMARY .....       | 118 |
| • ARABIC SUMMARY .....         | 121 |
| • REFERENCES .....             | 124 |

## Index of figures

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| FIGURE (1): Anterior and posterior views of the extra-articular knee structures ..... | 5  |
| FIGURE (2): Classification of patella morphology .....                                | 5  |
| FIGURE (3): Deep layer of the lateral retinaculum .....                               | 8  |
| FIGURE (4): Stabilizers of the patella on the right knee .....                        | 14 |
| FIGURE (5): Standing free-body diagram .....                                          | 14 |
| FIGURE (6): Q angle .....                                                             | 23 |
| FIGURE (7): femoral anteversion .....                                                 | 24 |
| FIGURE (8): Patellar palpation .....                                                  | 31 |
| FIGURE (9): Patellar compression test .....                                           | 31 |
| FIGURE (10): Patellar tilt test .....                                                 | 31 |
| FIGURE (11): Patellar apprehension test .....                                         | 32 |
| FIGURE (12): Patellar apprehension test .....                                         | 32 |
| FIGURE (13): Patellar gliding test .....                                              | 32 |
| FIGURE (14): Obers test .....                                                         | 34 |
| FIGURE (15): Insall- Salvati method to determine patellar height .....                | 38 |
| FIGURE (16): Caton's method to measure the height of the patella .....                | 38 |
| FIGURE (17): Laurin axial view .....                                                  | 41 |
| FIGURE (18): Merchant axial view .....                                                | 41 |
| FIGURE (19): Modified Jaroschy axial view technique .....                             | 41 |
| FIGURE (20): Modified Jaroschy axial view diagram .....                               | 41 |
| FIGURE (21): Measurements of axial view .....                                         | 43 |
| FIGURE (22): MRI normal A.P .....                                                     | 47 |
| FIGURE (23): MRI axial .....                                                          | 47 |
| FIGURE (24): MRI patellar tilt .....                                                  | 47 |
| FIGURE (25): MRI patellar lateral displacement .....                                  | 47 |
| FIGURE (26): Arthroscopy Normal .....                                                 | 50 |
| FIGURE (27): Arthroscopy CMP .....                                                    | 50 |
| FIGURE (28): Arthroscopy Normal alignment .....                                       | 51 |
| FIGURE (29): Arthroscopy Patellar lateralization .....                                | 51 |
| FIGURE (30): Arthroscopy Patellar tilt .....                                          | 51 |
| FIGURE (31): Arthroscopy Patellar subluxation .....                                   | 51 |
| FIGURE (32): Quadriceps strengthening and iliotibial band stretching exercises .....  | 56 |
| FIGURE (33): Hamstring & hip stretching exercises .....                               | 58 |
| FIGURE (34): Patellofemoral knee braces .....                                         | 60 |
| FIGURE (35): Lateral release .....                                                    | 63 |
| FIGURE (36): Proximal realignment .....                                               | 68 |
| FIGURE (37): The Elmslie-Trillat operation .....                                      | 68 |
| FIGURE (38) Case 28 .....                                                             | 91 |
| FIGURE (39) Case 8 .....                                                              | 91 |

|                           |     |
|---------------------------|-----|
| FIGURE (40) Case 23.....  | 93  |
| FIGURE (41) Case 24 ..... | 93  |
| FIGURE (42) Case 42 ..... | 95  |
| FIGURE (43) Case 33 ..... | 95  |
| FIGURE (44) Case 45 ..... | 97  |
| FIGURE (45) Case 48 ..... | 97  |
| FIGURE (46) Case 17 ..... | 99  |
| FIGURE (47) Case 6 .....  | 99  |
| FIGURE (48) Case 50... .. | 101 |
| FIGURE (49) Case 40 ..... | 101 |
| Index of tables           |     |

|                                                                        |     |
|------------------------------------------------------------------------|-----|
| TABLE (1) Rating Score as described by Bentley .....                   | 80  |
| TABLE (2) Table (2) Symptoms' Evaluation.....                          | 80  |
| TABLE (3) Table (3) Subjective criteria for patient evaluation.....    | 81  |
| TABLE (4) Table (4) Objective criteria for patient evaluation:.....    | 81  |
| TABLE (5) The overall results.....                                     | 83  |
| TABLE (6) Symptoms in 50 patients (%) .....                            | 84  |
| TABLE (7) Signs in 50 patients%.....                                   | 84  |
| TABLE (8) Radiographic parameters in proximal realignmentpatients..... | 85  |
| TABLE (9) Radiographic parameters in distal realignment patient .....  | 86  |
| TABLE (10) Radiographic parameters in lateral release patients.....    | 86  |
| TABLE (11)Surgical procedure for each type of alignment.....           | 107 |
| TABLE (12) Comparison of Results of lateral release .....              | 108 |
| TABLE (13) Comparison of Results of Proximal realignment .....         | 109 |
| TABLE (14) Comparison of Results of Distal realignment.....            | 110 |