

Fractura diafisaria oblicua del tercio distal de la tibia, con peroné intacto.

Osteosíntesis mediante fijadores externos

Caso 1

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Caso 1

Nombre: VEGA

Especie: Felina

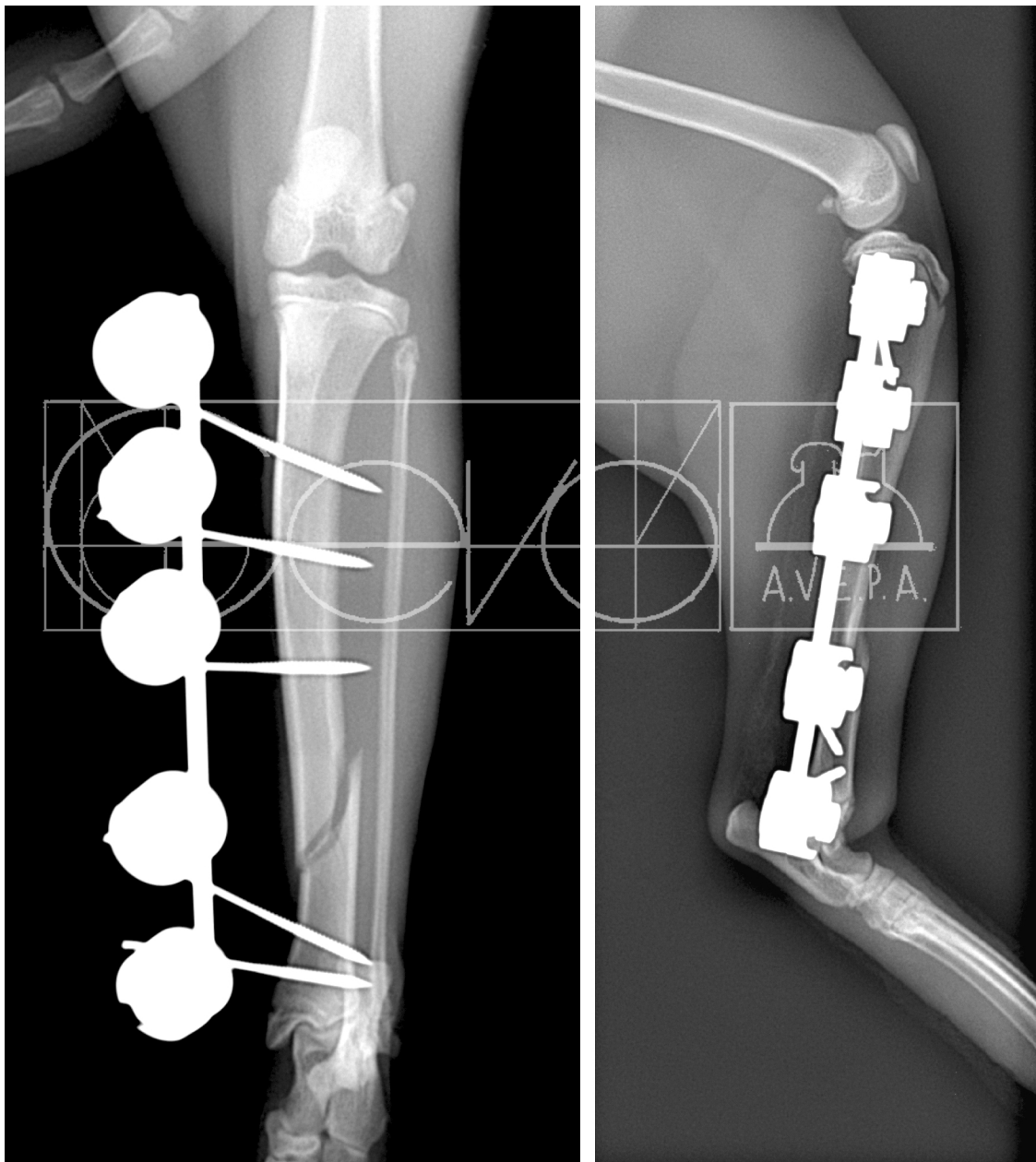
Raza: Común Europeo

Sexo: Hembra

Edad: 9 meses

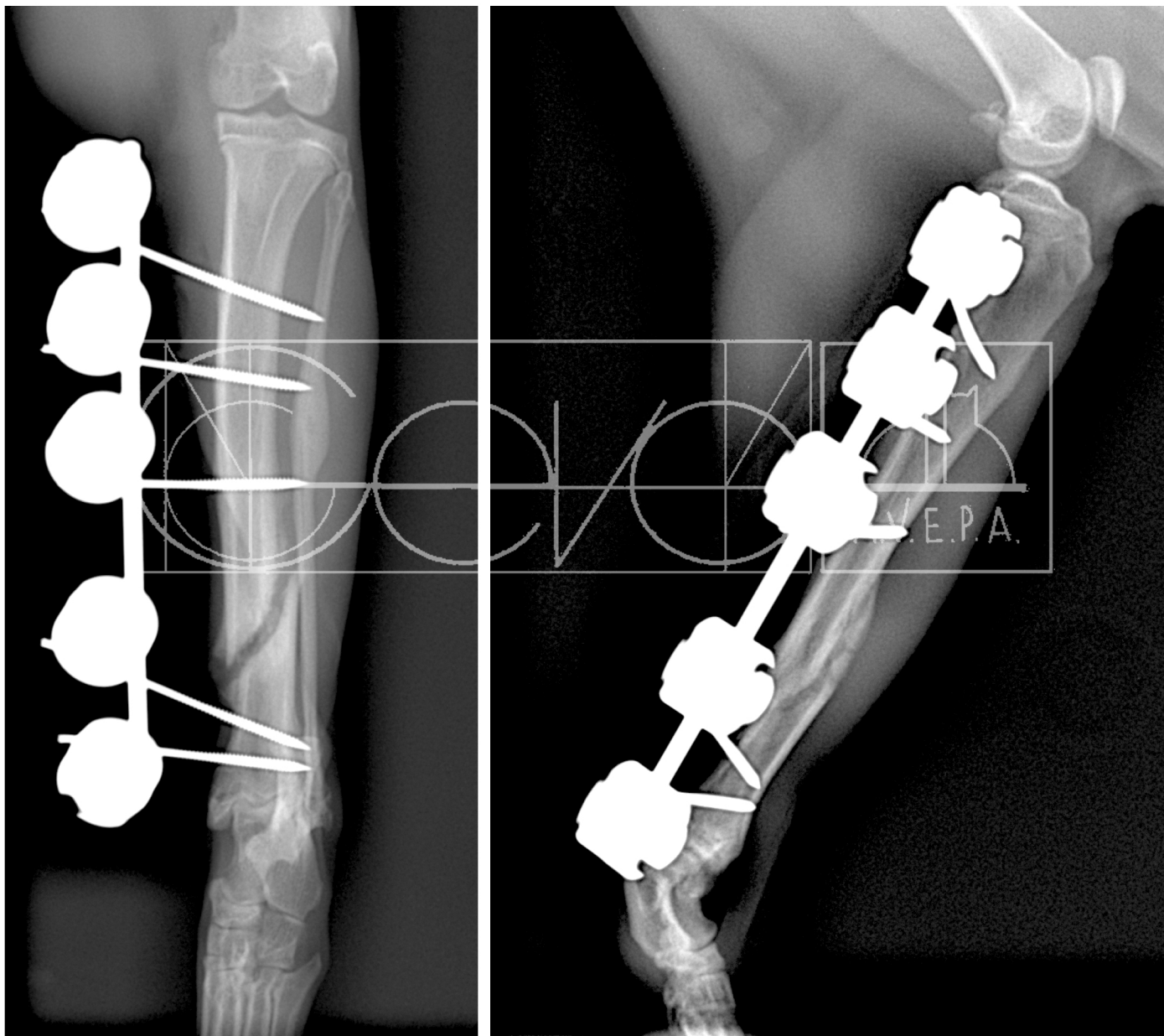
Peso: 3Kg

La gata sufre un accidente que le genera una fractura diafisaria oblicua del tercio distal de la tibia, pero mantiene el peroné intacto. No se aprecian heridas en la extremidad y, tal y como muestran las radiografías, los fragmentos se encuentran enfrentados



Tratamiento

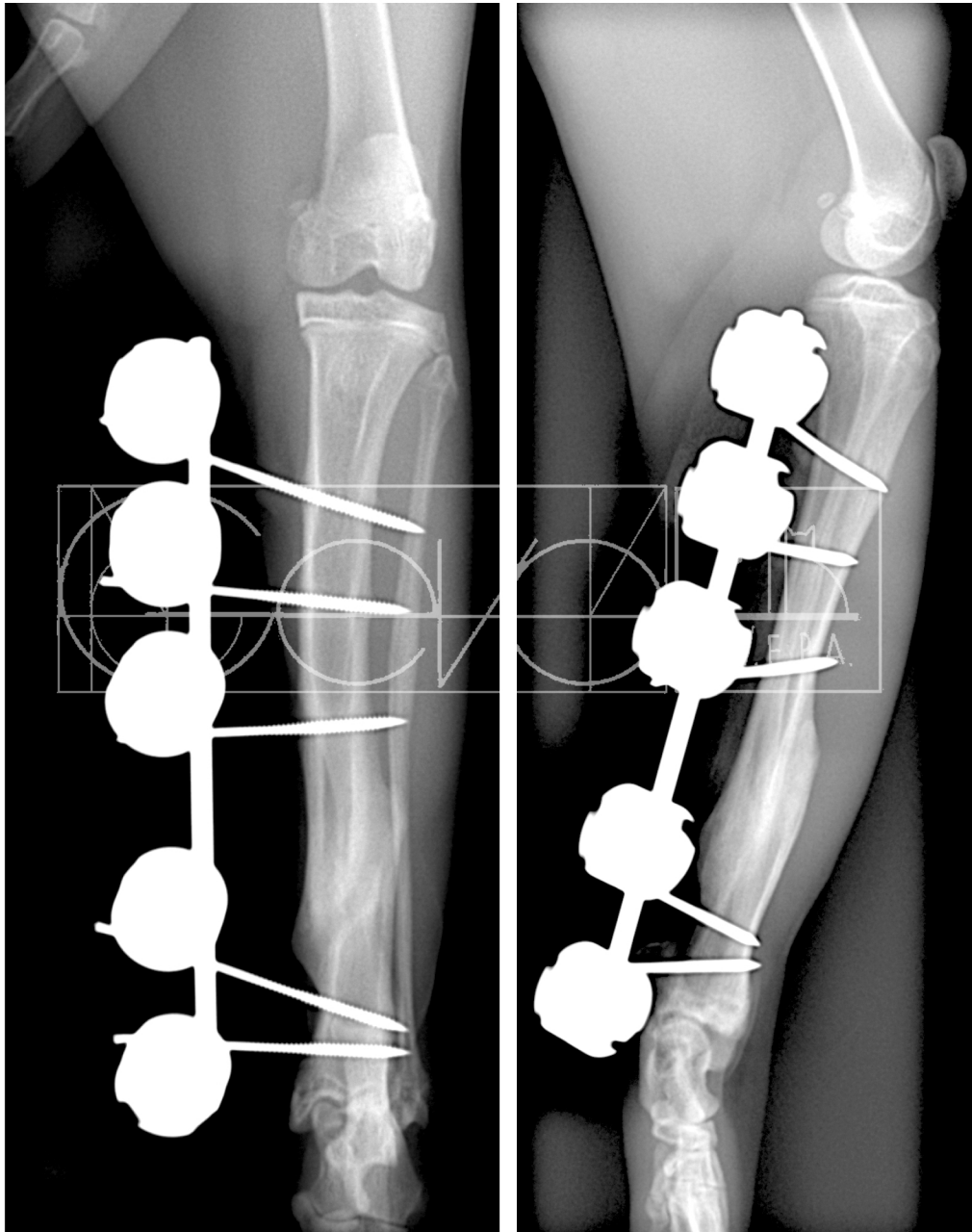
Obedeciendo a un concepto de osteosíntesis biológica, se trata la fractura a cielo cerrado, aplicando, en este caso, unos fijadores externos tipo I por la cara medial de la tibia. Se colocan tres agujas de 1'5 mm con rosca final positiva en el fragmento proximal y dos, de las mismas características, en el fragmento distal. Todas ellas se unen mediante rótulas de Meynard a una barra de sustentación de 3 mm.



Evolución

1º mes.

En las dos proyecciones (antero-posterior y medio-lateral) se aprecia estabilidad e indicios de cicatrización ósea.



Evolución

2º

mes.

En las dos proyecciones (antero-posterior y medio-lateral) se aprecia una buena cicatrización ósea.



Fin de la evolución

Se retiran los fijadores externos.

Comentarios

La clave de la elección del tratamiento, en este caso, estriba en estar intacto el peroné, que, al actuar como férula interna, ofrece una cierta estabilidad a la fractura y permite que los fragmentos queden enfrentados. Esta circunstancia nos ofrece la oportunidad de actuar a cielo cerrado y con el mínimo trauma posible, realizando así una osteosíntesis biológica, que facilitará la cicatrización ósea.

La elección de un fijador tipo I para este tipo de fractura está en la línea de lo que proponen la mayor parte de autores anglosajones, no justificándose estructuras más complejas y pesadas en estos casos.

PAPERS

Treatment of canine and feline diaphyseal radial and tibial fractures with low-stiffness external skeletal fixation

The healing of 62 cases of radial and tibial fractures treated with low-stiffness Kirschner-Ehmer external skeletal fixation frames (frame types 1a, 1a plus intramedullary pin [1aIMP], 1b and 2b) was evaluated. The mean time to clinical union was 65 days. All cases treated with 1b, 2b or 1aIMP frames healed. Four of 25 cases treated with 1a frames failed to heal due to premature pin loosening; these failures were in heavier patients than 1a cases which healed ($P=0.041$). Complications occurred in 40 of 62 cases, and were more common in cases treated with type 2b frames. Pin loosening was the most frequent complication (35 cases) and most commonly involved the most proximal pin ($P<0.001$). In type 2b frames, full pins loosened more frequently than half pins ($P<0.001$). This study indicates that canine and feline fractures can heal readily when treated with these frames, suggesting that more rigid type 2a or type 3 frames are unnecessary in the majority of cases. Increased morbidity compared with the use of more rigid frames need not be expected, but 1a frames should be avoided in heavier patients.

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INTRODUCTION

Radial and tibial fractures account for 30 per cent of all fractures in small animals (Ness and others 1996) and external skeletal fixation (ESF) is a common method of stabilisation (Egger and others 1985, Roe and others 1985, Johnson and others 1989, Pettit 1992, Piermattei and Flo 1997). Despite recent developments in equipment (Bronson and others 2003, Kraus and Wotton 1999) many veterinarians still use the Kirschner-Ehmer (KE) system which has been available for several years (Egger 1992).

The use of more rigid frame configurations (type 2a or type 3) has been advocated to enhance fracture healing and decrease complications (Johnson and others 1989, 1996, Foland and Egger 1991, Palmer and others 1992, Bouvy and others 1993). However, it has been demonstrated that allowing micromotion

at the fracture site stimulates callus formation and remodelling and leads to more rapid fracture healing (Goodship and Kenwright 1985). This effect has been demonstrated in human patients (Kenwright and others 1986, 1991). It appears that there are boundaries of strain magnitude within which secondary bone healing is maximised (Kenwright and Goodship 1989). Further work has shown that using frames with lower stiffness to allow loading of the bone and increased micromotion at the fracture site can be beneficial (Goodship and others 1993). The use of frames which are initially rigid and then staged down to decrease stress protection of the callus (O'Doherty and others 1995) and stimulate remodelling (Egger and others 1993a, b) has been advocated. However, other studies have not shown this to be beneficial (Auger and others 2002). Controlled micromotion can stimulate all the phases of healing, even in the early stages (Goodship and others 1998, Larsson and others 2001) and low-stiffness frames which allow early micromotion and loading of the fracture may therefore be beneficial (Goodship and others 1993).

Linear ESF frames can be categorised (Roe 1992) as type 1a, 1b, 2a, 2b or 3 (Fig 1). The stiffness of different KE frame configurations has been evaluated, and it has been shown that frame types 1a, 1a plus intramedullary pin (1aIMP), 1b and 2b have significantly lower stiffness than type 2a or type 3 frames (McPherron and others 1992, Bouvy and others 1993, Bronson and others 2003). Despite successful outcomes in animals treated with the more rigid type 2a or type 3 frames (Johnson and others 1989, Foland and Egger 1991), it may be that these frame types are unnecessary for fracture healing, and may even be detrimental by excessively reducing load and micromotion at the fracture site (Goodship and others 1993). In this study, the results of a series of canine and feline fractures treated with less rigid KE ESF frames are reported.

Comentarios

La elección de fijadores externos como opción a este tipo de fracturas en gatos o perros de pequeño tamaño está plenamente justificada al poder intervenir a cielo cerrado, ocasionando el mínimo trauma posible al animal. Por otro lado, existe una corriente cada vez más generalizada, desde hace años, de aplicar, incluso en fracturas menos benignas que esta, estructuras de fijación externa más ligeras, como son todas las variantes de tipo I o de tipo II modificadas.